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(Resolution adopted October 25, 1926 and revised February 6, 1933 and February 24, 1941)

Employment and Compensation in Education

GEORGE J. STIGLER
Columbia University

OCCASIONAL PAPER 33

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PREFACE

In 1940 the adults in this country had on the average spent a fifth of their years in school; in another generation the fraction will exceed a fourth. This powerful yearning for formal education has given rise to a very large industry, employing a million and a half persons. Indeed, until recently teachers have been the most numerous peacetime employees of government, and education has been its most expensive peacetime function.

The measurement and explanation of the trend in the number of teachers and in their compensation are the main subjects of this study. The substance of the educational process — the quality of the product, if you will — involves wholly different problems and skills and will not be entered into.

Elementary and secondary education are considered separately from higher education. The two levels differ in many respects. Elementary and secondary education are primarily public; higher education is half private. The fraction of the population between 6 and 17 enrolled in school is so high that population movements are the chief cause of fluctuations in enrollments; only a seventh of those between 18 and 21 were in college in 1940 Elementary school teachers are usually women who have taken a formidable list of courses in pedagogical principles and practices; college professors are usually men who possess or aspire to a Ph.D.

I wish to acknowledge the helpful suggestions I have received from several Directors and members of the research staff of the National Bureau, especially Arthur F. Burns, Milton Friedman, Geoffrey H. Moore, and Donald H. Wallace. Lois Proctor and Jane Kennedy did much of the statistical work, Irving Forman drew the charts, and Martha Anderson edited the manuscript.

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Part One

Elementary and Secondary Education

1 *Number of Teachers*

The number of teachers, principals, and supervisors in public and private schools more than doubled between 1900 and 1940, and enrollments in public schools increased by two-thirds (Table 1 and Figure 1).[1] In addition, public schools employed about 20,000 professional administrators (superintendents, etc.) in 1940. Finally, there is a very large staff of nonacademic personnel—janitors, bus drivers, nurses, attendance officers, physicians, etc. There was about one nonacademic employee for every eight teachers in 1900, and the proportion rose to one for four by 1940.

Table 1

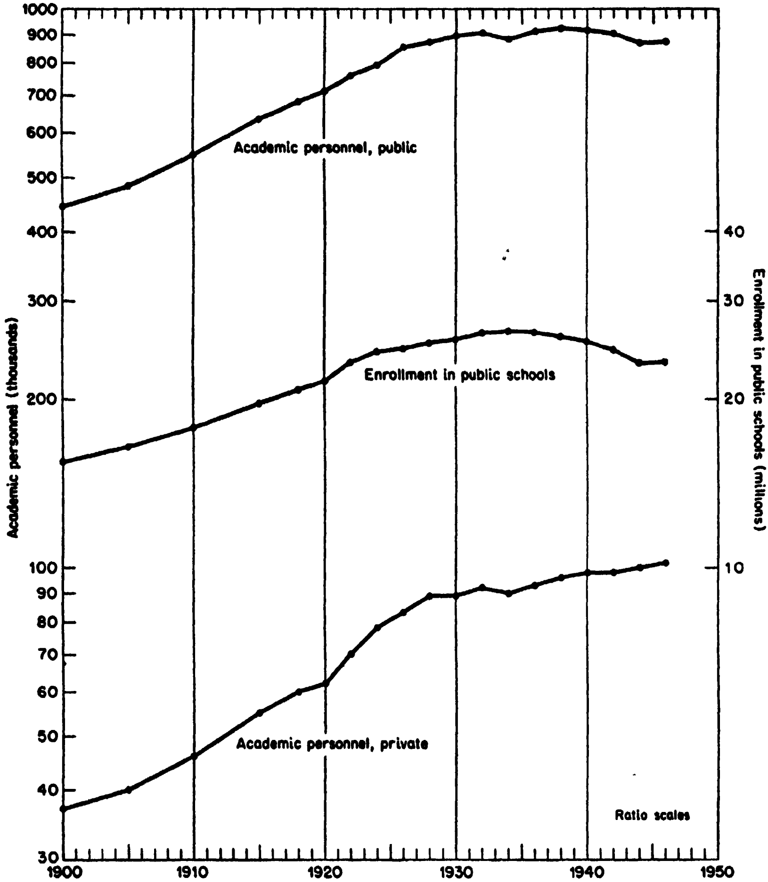
Academic Personnel and Enrollments, Elementary and Secondary Schools (thousands)

	ACADEMIC PERSONNEL			PUBLIC
	Public Schools	Private Schools	Total	SCHOOL ENROLLMENTS
1900	443	37	480	15,503
1905	482	40	522	16,468
1910	548	46	594	17,814
1915	633	55	688	19,704
1918	681	60	741	20,854
1920	711	62	773	21,579
1922	759	70	829	23,239
1924	791	78	869	24,289
1926	853	83	936	24,741
1928	872	89	961	25,180
1930	896	89	985	25,678
1932	905	92	997	26,275
1934	884	90	974	26,434
1936	911	93	1,004	26,367
1938	923	96	1,019	25,975
1940	917	98	1,015	25,434
1942	903	98	1,001	24,562
1944	870	100	970	23,267
1946	872	102	974	23,300

---

[1] The methods by which these data were assembled are described in Appendix A. We consistently report a school year by its terminal year; thus 1900 refers to the school year 1899-1900.

Figure 1
Academic Personnel and Enrollments in Elementary and Secondary Schools
1900 - 1946



The aggregate number of people employed in elementary and secondary education at the outbreak of World War II was therefore almost one and a third million. Manhours in education increased considerably more because the average number of days in a school year in public schools rose from 144 to 175, or 21 percent.

The decline in the number of public school teachers during the war was less than proportional to the decline in enrollment. The chief direct impact of the war seems to have been a large shift from men to women teachers between 1940 and 1944: the former declined 57,000, or 31 percent, and the latter rose 26,000, or 4 percent. Since 1946 there have been large, but not yet reported, increases in enrollments and in teachers. The number of births has been rising for 15 years and rapidly for 10 years—there were 2.2 million births in 1937, 3.2 million in 1943, and a peak of 4 million in 1947, and now enrollments in elementary schools are again rising.[2]

Private and parochial schools will not be discussed because the data on number of teachers and enrollment are poor and no information is available on finances. The ratio of private to public school teachers appears to have risen substantially, especially since 1920, and enrollment in Catholic schools has risen from 8.9 percent of public school enrollment in 1920 to 9.8 percent in 1940.

Universal education is common in west European nations, but only in the United States does a majority of the population remain in school through the age of 17. The comparison of England and Wales with the United States in the adjoining table emphasizes this difference. As a result of the protracted period of schooling in the United States, teachers are a relatively large percentage of the labor force.[3] A more important influence is the withdrawal of young people from the labor force. For example, if the proportions of those between 14 and 20 attending school in this country in 1940 had equaled the British figures for 1931, our school attendance would have been smaller by 7.7 million and our labor force would have been larger by 4 million, a reduction of 29 percent in enrollments and an addition of 8 percent to the labor force.[4]

PERCENTAGE OF POPULATION IN SCHOOL

	AGE GROUP		
	14-15	16-17	18-20
England and Wales, 1931	24.9	8.1	2.9
United States, 1930	88.8	57.3	21.4

---

[2] *Estimates of the Population of Continental United States: 1940 to 1948*, Bureau of the Census, Series P-25, No. 13 (Aug. 13, 1948). The number of public school teachers in cities increased 13 per cent from 1917 to 1949, according to the salary studies of the National Education Association; see Section 4.

[3] The percentages of the labor force who were teachers in the last comparable censuses were: United States, 1930, 2.02; England and Wales, 1931, 1.24; Germany, 1931, .64; France, 1931, .66.

[4] Estimated from the number working and attending school, not working and attending school, etc. (1940 Census, *Population*, IV, Part 1, Table XV) and adding all the unemployed to those not attending school.

downward trend of the school age population (Table 4): the elementary school population will regain its 1930 peak by 1950, and then increase by a fifth within five years; the secondary school population will regain its 1940 peak shortly after 1955, and then also rise rapidly.[8] It is still generally believed that the birth rate will not continue at the high level of the recent past, and if this belief (which vitiated the earlier forecasts) soon proves correct, the large increase in elementary school population by 1955 and in secondary school population by 1960 will soon thereafter be reversed. In any event, the immediate prospects are for increases of astonishing magnitude.

TABLE 4
Estimated Population of School Ages, 1940-1955
(thousands)

AGE GROUP	*1940*	*1947*	*1950*	*1955*
5-17 incl.	29,745	29,387	31,468	37,080
5-14 incl.	22,431	22,779	25,212	30,179
14-17 incl.	9,720	8,685	8,443	9,370

THE FRACTION ENROLLED IN SCHOOL

The fraction of children enrolled in school rose substantially from 1900 to 1930 (Table 5). Thereafter it was relatively stable at the elementary level (5-14 inclusive) but continued to rise at a high, though decreasing, rate at the higher ages.[9] The largest increases in the fraction enrolled were at the early school years (6-9) and the later school years (14-20); little increase in the intervening ages was possible after 1910.

At the elementary school ages the increase since 1910 in the fraction enrolled has been chiefly in the South and in rural areas generally (Table 6). The forces making for growth are apparently exhausted. If all children 7-14 inclusive attended in the same proportion as urban white children in 1940, for example,

---

[8] Table 4 is based upon Forecasts of Population and School Enrollment in the United States: 1948 to 1960, Series P-25, No. 18 (Feb. 14, 1949). The 1947 predictions of P. K. Whelpton (Forecasts of the Population of the United States, 1945-1975; Bureau of the Census) underestimated births between July 1, 1945 and July 1, 1948 by a fifth.

[9] The figures in Table 5 are not wholly comparable. In 1940 school enrollment was defined as enrollment in a regular school between March 1 and April 1, 1940; in 1930, the period was September 1, 1929 to April 1, 1930 and no restriction was placed on the type of school. This difference probably explains most of the decrease at certain ages. The 1910 and 1920 definitions were the same as those in 1930. Vocational schools not parts of regular schools, and also nursery schools (since children under 5 are not included) are excluded.

TABLE 5
Percentage of Population of Specified Ages Enrolled in Schools, 1900-1940

AGE	*1900*	*1910*	*1920*	*1930*	*1940*	% INCREASE *1910-40*
5	48.1	17.0	18.8	20.0	18.0	5.9
6		52.1	63.3	66.3	69.1	32.6
7		75.0	83.3	89.4	92.4	23.2
8		82.7	88.5	94.1	94.8	14.6
9		86.2	90.4	95.6	95.6	10.9
10	79.8	90.0	93.0	97.1	95.7	6.3
11		91.2	93.9	97.5	95.9	5.2
12		89.8	93.2	97.1	95.5	6.3
13		88.8	92.5	96.5	94.8	6.8
14		81.2	86.3	92.9	92.5	13.9
15	41.8	68.3	72.9	84.7	87.6	28.2
16		50.6	50.8	66.3	76.2	50.6
17		35.3	34.6	47.9	60.9	72.5
18	11.7	22.6	21.7	30.7	36.4	61.1
19		14.4	13.8	19.8	20.9	45.1
20		8.4	8.3	13.1	12.5	48.8

enrollments in this age group would have risen only 460,000, or 2.7 percent. A similar calculation would indicate an increase of another 475,000 children 5 or 6, but the stability of the enrollments of 5 year olds is apparent in Table 5. Moreover, many school systems require that children reach their sixth birthday before entering school and this provision excludes many 6 year old children.[10] The 'market' for elementary education is saturated: enrollments will closely follow the movements of the school age population.

At the secondary school ages (14-17 inclusive), 79.3 percent

[10] Only 42 percent of the 6 year olds would attend school if the age requirement were universal and enrollment was not permitted after September 1. The changes in enrollment ratios during and after the war are given in sample Censuses. The large increase in the percentage of 6 year olds seems wholly explicable by the shift in the date of enumeration to October. Unfortunately the Census has returned to the less stringent 1930 definition of school enrollment, so some increase is to be expected on this score also. See School Enrollment of the Civilian Population: October 1947, Bureau of the Census, Series P-20, No. 19 (July 30, 1948); also April 1947, Series P-20, No. 12 (Feb. 16, 1948); October 1948, Series P-20, No. 24 (April 18, 1949).

DATE	5 YEAR OLDS	6 YEAR OLDS
April 1940	18.0	69.1
October 1945	28.3	93.2
October 1946	32.3	93.8
April 1947		67.2
October 1947	25.4	93.8
October 1948	21.6	93.4

TABLE 6

Percentage of Population 7-13 Inclusive Enrolled in Schools, 1910-1940

	1910	*1920*	*1930*	*1940*
All	86.1	90.6	95.3	95.0
Urban	91.8	94.4	97.3	97.1
Rural	82.4	87.6	93.3	92.9
Northeast	93.5	94.5	97.7	97.3
South	75.1	84.1	90.8	91.0
North Central	92.7	94.6	97.8	97.3
West	89.1	93.1	96.9	97.0

were enrolled in school in 1940, or a sixth less than in the group 5-14 inclusive (95.0 percent). The percentage of urban white children 14-17 inclusive enrolled in school has been much less stable than that of younger children and therefore offers a less satisfactory estimate of the potential enrollment.[11] (Using the urban white enrollments in 1940 as an estimate of potential enrollments, total enrollments of those 14-17 inclusive would have risen 660,000, or 8.7 percent.)

Secondary school enrollments are the outcome of a multitude of factors we need not analyze; it is sufficient to mention two factors in addition to race and urbanization:[12] legislation, and income and employment. The influence of legislation is difficult to isolate, but a brief investigation (reported in Appendix B) suggests that on the whole compulsory school attendance laws have followed more than led the increase in enrollments of children over 14.

The effects of a community's income upon school enrollments are complicated. The relatively low school enrollment ratios in states with the lowest per capita incomes are easily explained by both the necessity for older children to work and the inability of

[11] The percentage of urban white children enrolled in school has risen as follows:

AGE	*1920*	*1930*	*1940*
7-13 incl.	94.4	97.7	97.3
14-17 incl.	62.4	77.4	86.0

[12] Urbanization and race are already allowed for by using urban white children as the measure of potential enrollments. The difference between urban and rural enrollments is not large in the younger age groups (Table 6); at higher ages it reflects income and employment in good part. In the age group 14-17 inclusive the fraction of Negroes enrolled in schools in 1940 was .84 of the fraction of white children enrolled in school, but in the South the ratio was .90 and in the remainder of the United States .95. Both sections have lower ratios than the nation because of the concentration of Negroes in the South, where the fraction of all children enrolled in school is lower.

these states to support long schooling. But when business conditions are depressed, older children tend to stay on in school because of the difficulty of finding employment. One evidence of this is that in 1940 the states with higher percentages of unemployed children 16 or 17 in the labor force were commonly also the states with higher enrollment ratios.[13] Another is that the enrollment ratio for those 16 or 17 in October 1947 was less than in April 1940,[14] and the large decline in high school enrollments during the war points in the same direction. Since the 1940 Census was taken when unemployment was large, and the preceding decennial censuses were taken in relatively prosperous times, the upward trend in the enrollment ratio after 1930 of those 14-17 inclusive is probably exaggerated. While enrollments do not press as hard on the ceiling of population as they do at the elementary level, it seems improbable that more than a 10 percent increase in enrollments in secondary schools will come from a rise in the enrollment ratio.

ENROLLMENT PER TEACHER

The enrollment per teacher in both elementary and secondary schools has been relatively stable since 1920 (Table 7). This stability in the national averages reflects the approximate canceling of a set of forces that have effected considerable changes within the various states.

TABLE 7

Enrollment per Teacher in Public Elementary and Secondary Schools, 1900-1946

	ELEMENTARY SCHOOLS	SECONDARY SCHOOLS
1900	37.2	25.5
1910	35.1	22.0
1918	34.2	19.6
1920	33.6	21.6
1922	34.3	22.2
1924	33.9	23.5
1926	32.6	22.2
1928	33.1	20.7
1930	33.2	20.6
1932	33.0	22.2
1934	33.5	24.9
1936	33.8	22.3
1938	33.2	22.0
1940	32.7	22.0
1942	32.6	21.3
1944	32.9	19.2
1946	32.7	19.4

[13] The rank correlation between the percentage of unemployed persons in the labor force and the percentage enrolled in schools (in the 16-17 age group) for the 48 states was + .561. Persons 16-17 seeking work probably include a few attending school.

[14] The respective percentages were 67.6 (based upon a less stringent definition of enrollment) and 68.7; see note 9 above.

The primary factors leading to larger enrollments per teacher are associated with the growth in the size of the individual school. In part because the population is becoming more urban, in part because of improvements in transportation, and in part because of a strong movement toward consolidated schools, the number of small schools has declined sharply. The number of one-teacher schools, for example, declined about 40 percent between 1920 and 1940.[15] Enrollments per teacher run higher by a fifth in urban than in rural schools, and from two to four times as high in urban schools as in one-teacher schools.

On the other hand, within urban school systems, where the growth of school size is less important, there are conflicting trends in enrollment per teacher at various levels (Table 8). At the elementary level, enrollment per teacher is somewhat above the average for the nation but is declining; at the secondary level, it is almost 50 percent larger than for the nation and is rising. As urban and high school enrollments are still gaining relatively, these forces work in opposite directions, and only gradual and moderate changes in the over-all ratio of students to teachers are to be expected in the relevant future.[16]

TABLE 8

Enrollment per Teacher in City School Systems, 1920 and 1938

	ELEMENTARY		SECONDARY	
SIZE OF CITY	*1920*	*1938*	*1920*	*1938*
10,000- 30,000	37.9	33.7	24.6	28.6
30,000-100,000	36.9	33.4	24.4	29.2
100,000 & over	39.0	36.6	25.2	30.7

SUMMARY

The future trend in the number of teachers is likely to be dominated by the population of school age. The fraction of those of elementary school ages enrolled in schools cannot change substantially and the fraction of those of secondary school age enrolled in school cannot be expected to rise much—probably a tenth at the outside. Enrollment per teacher can change much

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[15] No continuous series is available but series for 1 room schoolhouses and 1 teacher schools may be roughly spliced.

	1920	*1930*	*1940*	*1944*	*1946*
1 room schoolhouses	189,227	148,712			
1 teacher schools		149,282	113,600	96,302	86,563

[16] The percentage of public school teachers in high schools rose very rapidly between 1900 and 1940: from 4.8 in 1900, 8.2 in 1910, 14.9 in 1920, 25.0 in 1930, to 34.3 in 1940.

more, of course. Yet not only has the ratio been stable for almost three decades but any large decrease in the size of classrooms would encounter the obstacle of greatly increased educational costs, for teachers' salaries are considerably more than half of the cost of operating elementary and secondary schools. Thus it appears probable that the number of teachers will increase by about one-fifth in the next decade if the population forecasts (Table 4) prove to be near the mark.

3 *Recruitment of Teachers*

GENERAL CHARACTERISTICS

Women comprise a much larger majority of teachers in the United States than in most European countries: they were 68.1 percent of all teachers in England in 1931, and most continental countries fall well below this level. There is some evidence of a reversal of trend in this respect: women increased relatively throughout the nineteenth century and down to 1920, but a very substantial reaction set in during the 'thirties (Table 9).[17] The increase of male teachers is due in part to the growth of secondary schools, where men are relatively more numerous, and perhaps in part to the difficulty of getting employment in private industry during the 'thirties.

The median age of female teachers has risen sharply but unevenly since the beginning of the century. It has been widely

TABLE 9

Some Characteristics of All Teachers, 1900-1940

	1900[a]	*1910*	*1920*	*1930*	*1940*
Male (%)	25.5	19.9	15.5	18.2	24.7
Female (%)	74.5	80.1	84.5	81.8	75.3
White (%)	95.1	95.0	95.2	94.6	93.6
Nonwhite (%)	4.9	5.0	4.8	5.4	6.4
% of women married	4.5	6.4	9.7	17.9	24.5
Median age[b] (years)					
Male	30.1	34.1	35.2	32.6	34.3
Female	26.0	31.7	28.5	28.8	34.0

[a] Based upon teachers plus a relatively small number of college professors, except in the sex distribution.

[b] The great width of the age groups in 1900 and 1910 makes the estimate of median age very approximate; our linear interpolation probably yields overestimates.

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[17] Still another reversal occurred during the war, when the number of men teachers fell sharply (see Sec. 1); and it in turn was partly reversed between 1944 and 1946.

held that the occupation is staffed chiefly by women who soon leave it for marriage: state departments of education estimated in 1930 that the average professional life of teachers was 6 years.[18] The age data do not confirm this view of the transitory nature of teaching, except to the extent that most teachers are women and on the average women leave the labor force at an earlier age than men. In 1930 the median age of teachers was only .6 years less than that of all women in the labor force (and in 1940, 1.7 years greater), a difference smaller than one would expect simply because of the rapid growth of the number of teachers. The proportion of married women has increased more than in the labor force at large, despite a growing objection in many school systems to employing married women.

On the whole the occupation seems to have been relatively fully employed; in 1930, 1.65 percent of male teachers were unemployed, 1.53 of female; in 1940, the percentages were 2.67 and 2.05.[19] Teachers' salaries in real terms increased during the decade, as we shall see, and this raises the question why more women were not attracted to the occupation so the unemployment rate would more closely approach that for all women (10.1 percent). The question cannot be definitely answered, but it is a plausible conjecture that unemployed teachers are given preference in other occupations. Teachers usually have college training, and persons with a college education had a much lower unemployment rate than the population at large.[20]

[18] More precisely, this was the average of the replies to the question, "On the average, how long do teachers remain in service in your state?" The considerable mobility of teachers between states (see below) makes the intrastate service life somewhat less than the total service life. See Teacher Supply and Demand, National Education Association, Research Bulletin, Nov. 1931, p. 338.

[19] The percentage of unemployed women teachers was 3.7 in 1940 if those on public emergency work are counted as unemployed. The data on 'usual' occupation do not reveal any marked tendency for unemployed teachers to withdraw from the labor force: of the 205,000 not in the labor force who gave teaching as their usual occupation, 149,000 were 'married with husband present', and of the remainder 16,000 were 45 to 65 and 17,000 were 65 or older.

[20] The percentage of experienced female workers who were unemployed in 1940 varied inversely with education: 9.0 percent, for those who had been only to grade school; 8.5 percent, for those who had attended high school; and 4.0 percent, for those who had attended college.

CERTIFICATION

The entrance of teachers into a particular school system is in every state controlled by the requirement that the entrant possess a certificate. Such certificates were generally required already by 1900 but with almost nominal requirements for 'low-grade' certificates and with numerous exceptions. The growing rigor of the requirements is recorded in Table 10.

TABLE 10
Distribution of States by Minimum Scholastic Requirements for Certificates for Inexperienced Teachers
(Temporary and Emergency Certificates excluded)

	NUMBER OF STATES		
YEARS OF COLLEGE	*1921*	*1937*	*1949*
4		5	24
3		8	7
2		11	16
1		8	1
High school graduation and less than one year of professional preparation	4	2	
4 years of high school	14	6	
No standard	30	8	
Total	48	48	48

Sources: B. W. Frazier, Development of State Programs for the Certification of Teachers, Office of Education, Bulletin 1938, No. 12, p. 73. Data for 1949 compiled from Elementary and Secondary School Teachers, BLS, Bulletin 972.

The licensing function is usually performed by state education officials, and would obviously be a convenient device for controlling the entry of new persons into the profession. Although the proposal to restrict numbers was frequently heard in the 'thirties,[21] I have seen no evidence that the licensing system has been used extensively to this end. All states (but not all cities) automatically grant one or more types of certificate on the basis of academic credits in teacher-training institutions (both within and outside the state). At present, therefore, the power to control new entrants is diffused among a thousand or more institutions of higher learning.

Of course entry of new teachers has been discouraged by the educational requirements, both as to length of training and detailed prescriptions of courses in pedagogy. These standards, however, appear to have been formulated primarily with a view to improving the quality of teachers—with what success we need not discuss.[22]

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[21] See, for example, E. S. Evenden, National Survey of the Education of Teachers, Office of Education, Bulletin 1933, No. 10, VI.

SUPPLY AND DEMAND

Numerous studies have been made of the sources from which new teachers are drawn by a school system and the reasons for vacancies.[23] The largest and most informative of these surveys, for the school year 1930-31, was based upon replies to questionnaires by half of the public school teachers in the country (Table 11).[24]

The mobility of teachers is substantial: an average of 9.1 per-

TABLE 11

Supply and Demand for Public School Teachers and the Sources of Each, per 1,000 Teachers Employed, 1931

SOURCE	ELEMENTARY SCHOOLS				JUNIOR HIGH	SENIOR HIGH	ALL*
	Communities of						
	Open Country	Under 10,000	10,000-100,000	100,000 or more			
New teachers	372	222	100	50	148	205	205
			DEMAND				
Predecessor died or retired	26	15	6	3	7	9	13
Predecessor went to college	29	13	3	1	9	11	13
Predecessor married	51	41	25	6	20	26	32
Predecessor moved to another teaching position	194	95	26	11	53	88	91
Predecessor moved to another occupation	28	14	3	1	11	19	14
New position created	17	24	20	12	31	33	23
Other	27	20	16	16	18	18	20
			SUPPLY				
College or normal school	145	87	41	20	64	92	84
Moved from another teaching position	165	107	46	13	62	86	91
Moved from another occupation	42	19	6	7	13	18	20
Other	21	9	7	9	8	8	11

Source: Evenden, *op. cit.*, p. 202; calculated from rounded data.

*The respective weights of the columns are .210, .249, .122, .147, .071, and .199. They are estimated from the number of teachers in 1930; the division of teachers between open country and urban is based on the number of children 7-13 inclusive enrolled in school in 1930 in rural farm and other areas.

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[22] For a highly critical appraisal, see 'Required Courses in Education', Report of Committee Q, Bulletin of American Association of University Professors, XIX (1933), 173-200; for references to the literature calling for an expansion of such requirements, see Frazier, *op. cit.*

[23] To the economist perhaps the most baffling finding in certain of these studies is that the demand (appointments) has often exceeded the supply (appointees); see, for example, B. R. Buckingham, Supply and Demand in Teacher Training, Ohio State University, Bureau of Research Monograph 4 (1926).

[24] The average percentage of replies was 47.9, ranging from 5.8 for West Virginia to 79.1 for New Jersey. The South as a whole is underrepresented and the sample appears to contain other systematic biases but insufficient information is given to estimate or correct them.

cent (or about 90,000) shifted among school systems between 1929-30 and 1930-31, and another 2 percent entered teaching from other occupations. The total turnover was correspondingly high: one-fifth of all teachers entered their positions in 1930-31, and only a tenth of these newly filled positions were newly created.

There is a general drift of teachers toward larger cities, witness the higher rates of supply than of demand due to movement among teaching positions in the larger cities. This drift is confirmed by evidence on teaching experience: the median number of years of teaching experience of elementary school teachers was 5 in open country schools, 7 in communities under 10,000, 10 in cities of 10,000-100,000, and 12 to 13 in cities of 100,000 or more.[25]

4 *Salaries of Teachers*

The salaries of public school teachers vary systematically with the type of school, size of community, region, age and training of teacher, and numerous other factors. We shall first describe certain of the leading characteristics and determinants of this salary structure, then examine trends in salaries since 1900. Thereafter some comparisons will be made between teachers' salaries and earnings in other occupations.

SIZE OF COMMUNITY, REGION, AND GRADE OF SCHOOL

The most prominent feature of the salary structure of teachers in 1938 is the steady increase in salary with community size, for each region and type of school. In 57 of the 60 possible comparisons of salary among adjacent community sizes in Table 12, higher salaries are paid in the larger community.

The regional differences are almost equally uniform. Salaries are highest in the Northeast in each grade of school and size of community (with three exceptions), second highest in the West (with four exceptions), next highest in the North Central region (with two exceptions), and lowest in the South (with one exception). But the regional differences among the nonsouthern regions are generally smaller than the size of community differences.

The salary differences among levels of school are smaller than those among regions and community sizes,[26] but even here a

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[25] Evenden, *op. cit.*, II, 30-1. The median ages in each class were 20 years higher.

[26] The differences by school grade are larger in rural schools, in part because high schools are more often consolidated school districts; see Salaries of School Employees, 1938-39, NEA, Research Bulletin, March 1939, 91 ff.

TABLE 12

Average Salaries of Public School Teachers by Region, Size of Community, and Type of School, 1938

TYPE OF SCHOOL & COMMUNITY SIZE	REGION			
	Northeast	South	North Central	West
Kindergarten	$2,148	$1,592	$1,688	$1,890
10,000- 30,000	1,594	639	1,273	1,454
30,000-100,000	1,803	1,233	1,454	1,695
100,000-250,000	1,892	1,601	1,552	1,745
250,000 & over	2,534	1,661	1,974	2,087
Elementary	2,212	1,268	1,707	1,981
10,000- 30,000	1,546	908	1,311	1,534
30,000-100,000	1,831	1,048	1,504	1,821
100,000-250,000	1,926	1,395	1,596	1,883
250,000 & over	2,770	1,580	2,011	2,264
Junior High	2,384	1,589	1,893	2,215
10,000- 30,000	1,817	1,141	1,498	1,658
30,000-100,000	2,026	1,290	1,714	2,247
100,000-250,000	2,059	1,468	1,869	2,176
250,000 & over	3,007	1,904	2,375	2,407
Senior & Junior-Senior High	2,282	1,686	1,980	2,381
10,000- 30,000	1,953	1,229	1,713	1,905
30,000-100,000	2,309	1,253	1,957	2,228
100,000-250,000	2,449	1,811	1,887	2,242
250,000 & over	2,822	2,160	2,518	2,670
Regular High	2,912	1,420	2,336	2,284
10,000- 30,000	1,872	1,150	1,494	1,810
30,000-100,000	2,302	1,267	1,701	2,369
100,000-250,000	2,486	1,688	2,007	2,202
250,000 & over	3,516	1,769	2,715	2,409

Source: *Biennial Survey of Education, 1937-38*. The regions are those of the 1940 Census; the community sizes those of the Office of Education, except for the class 250,000 and over, which is based on the 1940 Census.

fairly regular pattern is discernible. Salaries are lowest for kindergarten teachers, those of elementary and junior high school teachers are next in that order, and those of junior-senior and senior high schools are about equal to those of regular high school teachers.[27]

The substantial variation of salary with size of community is a general finding in income studies; presumably it is due to

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[27] The difference between salaries of elementary and secondary school teachers in cities over 10,000 has been declining steadily over time. The trend continued to 1949.

	1915	*1918*	*1928*	*1938*
Average Salary				
Elementary School	$ 673	854	1788	1876
Secondary School	$1060	1268	2217	2249
Ratio: Secondary to Elementary School Teachers'. Salary	1.58	1.48	1.24	1.20

differences in costs of living.[28] Regional differences, however, are usually fairly small when community size is held constant. Teachers are clearly an exception, perhaps because the general practice of state equalization of educational funds (whereby wealthier communities subsidize education in poorer communities) mixes regional and size of community influences. The variations of salaries with level of school are in keeping with variations in the training of teachers (see below).

TRAINING AND AGE

The differences among salaries by size of community and grade of school correspond closely with patterns of academic training. The survey of 460,000 public school teachers in 1931 revealed a steady rise in the amount of schooling of elementary school teachers with community size.[29] Teachers in junior high schools attended school an average of 15.5 years; those in senior high schools 16.2 years.

	AV. NUMBER OF YEARS TEACHERS ATTENDED SCHOOL	% OF TEACHERS WITH 4 OR MORE YEARS OF COLLEGE EDUCATION
Open country, 1 and 2 teacher schools	13.2	3.7
Open country, 3 teacher schools	14.0	11.4
Towns of less than 2,500	14.1	9.5
2,500 - 10,000	14.3	13.8
10,000 - 100,000	14.4	14.8
100,000 & over	14.6	22.0

The regional differences in salaries also parallel smaller relative differences in the amount of formal training, except that teachers in the South had on the average longer training than those in the North Central region.[30]

We would expect a stronger relationship between salary and schooling were it not for the rapid increase in the number of

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[28] H. E. Klarman, A Statistical Study of Income Differences Among Communities, in *Studies in Income and Wealth, Volume Six;* Friedman and Kuznets, *Income from Independent Professional Practice,* Ch. 5 (NBER, 1943 and 1945, respectively).

[29] Evenden *et al.,* II, 43.

[30] (*Ibid.,* p. 224). There appear to be serious errors in the data: the average years of school attendance are as high or higher in each region than in the country as a whole.

AVERAGE YEARS OF SCHOOL ATTENDANCE BY REGIONS FOR TEACHERS IN CITIES OF 10,000-100,000

NORTHEAST	SOUTH	NORTH CENTRAL	WEST
15.0	14.6	14.4	14.8

school teachers before 1930.[31] Salaries rise steadily with teachers' ages, in part because of the movement from rural to city school systems, in part because of the widespread practice of granting automatic salary increases. The older teachers, however, have had less formal education, so as late as 1919, there was a consistent negative relationship between salary and academic training in cities.[32] As the number of teachers with a college degree increases, we would expect the relationship between education and salary to become more pronounced.

SEX AND RACE

The median salary of all teachers, public and private, was $1,458 for men and $972 for women in 1939.[33] The difference seems due almost exclusively to differences in type of work, grade of school, or region. Of these factors grade of school is most important: in 1940 in cities over 10,000, men were 4.4 percent of all public school teachers in elementary schools, but 41.3 percent of all teachers in the regular high schools. Men generally hold the supervisory positions in school systems, and this works in the same direction. There are also relatively few men teachers in the South, where salaries are relatively low: in 1940, of the 17 states in which fewer than a fifth of the teachers were men, 9 were in the South.[34]

[31] Many school systems have schedules that automatically increase the teacher's salary with academic training; in New York, for example, a teacher with a master's degree receives $200 more per year than a teacher with a bachelor's degree.

As will be shown below (Sec. 2, Note 40), the average increase in annual salary necessary to compensate for an additional year of training is about 5 or 6 percent; judged by this standard the $200 differential is too narrow in New York City and too wide in most of the remainder of the state.

[32] Evenden, Teachers' Salaries and Salary Schedules, NEA, Commission Series 6 (Washington, D. C., 1919), p. 79.

[33] 1940 Census, *Population,* III, The Labor Force, Part 1, U. S. Summary, Table 73. The medians are for experienced persons in the labor force in 1939. The medians for those working 12 months in 1939 are less instructive because most teachers considered themselves, or were considered, unemployed during the summer.

[34] *Biennial Survey of Education, 1938-40* and *1940-42,* II, Ch. 7, p. 11. On the other hand, there was a somewhat higher proportion of men than women in rural schools: men were 20.4 percent of all urban teachers and 23.9 percent of all rural teachers (*ibid.,* Ch. 3, p. 39).

After allowing for these factors, the difference between salaries of men and women teachers appears to be small—probably about 5 percent larger for the former group.[35] In 11 states and a majority of city school systems, different rates of pay for men and women teachers are forbidden by law.[36]

The salaries of Negro teachers averaged only 57 percent of those of white teachers in 12 southern states in 1938.[37] However, this figure exaggerates the differences in salaries paid for teachers of different race but similar ability and working in similar schools:

1) The Negro school systems in 17 southern states had an average school term of 30.6 weeks; the white school systems in these states averaged 34.0 weeks.
2) Relatively more Negro teachers are in elementary schools. Only 8.5 percent of the Negro students were in secondary schools, whereas 21.4 percent of the white students were in secondary schools in these 17 states.[38]
3) Negro schools are more often located in rural areas or small communities than white schools (Sec. 2).
4) The formal education of Negro teachers is on the average less than that of white teachers. Of white teachers in the South in 1940, 58 percent had completed 4 or more years of college; of the Negro teachers, only 38 percent.[39]

We do not possess information to estimate the salary differences that would still be found after allowing for these factors.

SALARIES SINCE 1900

The average salary of public school teachers rose from about

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[35] In the 16 states from which 50 or more replies were received from men teachers in 1 and 2 teacher open-country elementary schools in the National Survey of the Education of Teachers, men's salaries averaged 5 percent more than women's (Evenden *et al.*, Office of Education, Bulletin 1933, No. 10, II, 251-2). The difference was considerably larger in high schools, but here it was impossible to segregate the influences of community size and administrative rank.

[36] M. L. Plunkett, Equal Pay for Women Workers, *Monthly Labor Review*, September 1946, p. 385.

[37] *Biennial Survey, 1936-38,* Bulletin 1940, No. 2, Ch. 2, p. 137.

[38] *Ibid.*, p. 138.

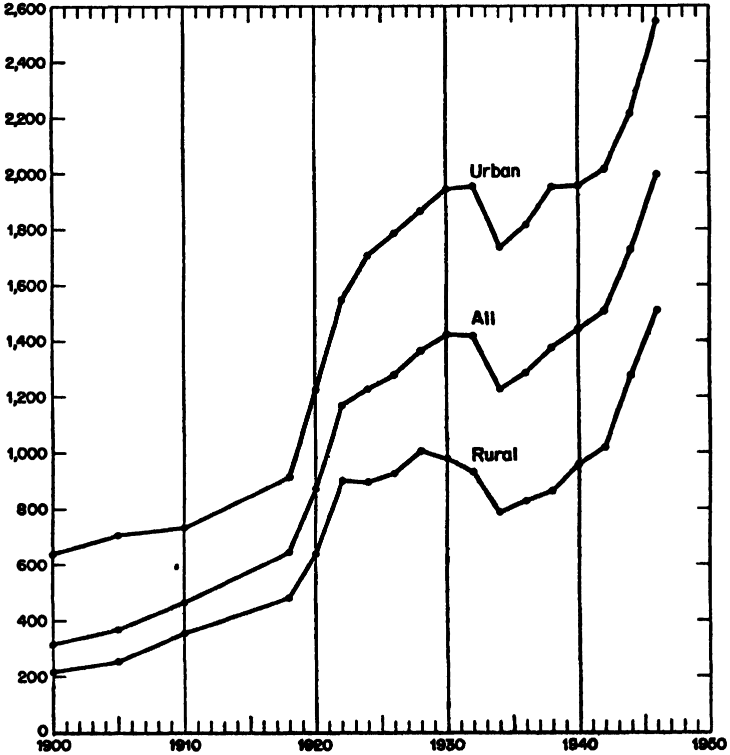
[39] 1940 Census, *Occupational Characteristics.*

$311 in 1900 to $1,995 in 1946 (Figure 2 and Table 13).[40] As the rise was somewhat more rapid in rural than in urban schools, the fraction rural salaries were of urban salaries rose from one-third in 1900 to almost three-fifths in 1946.

The upward march of salaries has been interrupted only once —in the 'thirties, when the average salary fell 13 percent from 1932 to 1934, then more slowly recovered. Rural teachers' salaries followed a less even course, beginning to decline earlier and failing to regain the previous peak until (1941 or) 1942.

The cost of living index compiled by the Bureau of Labor Statistics is a very shaky instrument with which to 'deflate'

Figure 2
Average Salaries of Supervisors, Principals, and Teachers in Public Schools, 1900-1946



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[40] These figures are really a mixture of salary and earnings: they are aggregate payrolls divided by number of teachers employed (or at times teaching positions; see App. A).

TABLE 13
Average Salaries of Supervisors, Principals and Teachers in Public Schools, 1900-1946

	AVERAGE SALARY All	AVERAGE SALARY Rural	AVERAGE SALARY Urban	COST OF LIVING INDEX (1935-39:100)	URBAN SALARIES IN 1935-39 PURCHASING POWER
1900	$ 311	$ 215	$ 638	52.6	$1,213
1905	368	252	704	59.3	1,187
1910	463	353	732	62.4	1,173
1918	641	478	911	97.8	931
1920	871	638	1,222	135.3	903
1922	1,166	899	1,545	123.6	1,250
1924	1,227	895	1,706	123.5	1,381
1926	1,277	927	1,787	128.2	1,394
1928	1,364	1,007	1,865	123.8	1,506
1930	1,420	979	1,944	122.8	1,583
1932	1,417	930	1,951	104.2	1,872
1934	1,227	787	1,735	93.9	1,848
1936	1,283	827	1,818	98.0	1,855
1938	1,374	864	1,952	103.0	1,895
1940	1,441	959	1,955	99.6	1,963
1942	1,507	1,018	2,013	110.5	1,822
1944[e]	1,728	1,276	2,215	124.4	1,781
1946[e]	1,995	1,508	2,545	129.9	1,959

Source: Salaries, *Biennial Survey of Education.* Rural includes cities under 4,000 through 1910, and cities under 2,500 thereafter to 1930. Beginning with 1930, urban includes also small cities that are part of larger school district. Cost of living index: See Table 21.

[e] Urban and rural salaries estimated from city and aggregate data. The National Education Association estimates average salaries to be $2,550 in 1948 and $2,750 in 1949; Teachers in the Public Schools, NEA Research Bulletin, Dec. 1949.

teachers' salaries to obtain a series on real income. Aside from its technical deficiencies, such as failure to take full account of changes in the quality of goods, it pertains to a wholly different type of consumer (a family with husband and wife, living in a large city, engaged in clerical or manual work).[41] Half of the teachers are unmarried women, and only about one-sixth of all teachers (and two-fifths of urban teachers) live in cities with more than 100,000 inhabitants. The deflation carried out in Table 13 therefore yields only a very rough estimate of the movements of real salaries of urban teachers.

Moreover, one must avoid the tendency, common in educational literature, to interpret a movement of the average salary as representing the movement of the salary of the average teacher. In a period when there are many departures from and new entrants into teaching, the average salary could be stable while everyone who remained in teaching received large increases by moving from small to large cities, from elementary to secondary schools, etc. These sorts of movement are believed to have occurred, but on an unknown scale, since 1940.[42]

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[41] The differences in cost of living by community size are substantial, and in particular rural teachers' salaries cannot be set against urban costs of living. In 1921 the median salary of rural teachers in Pennsylvania was only $411, but the median annual cost of room and board was only $121 (L. A. King, Status of the Rural Teacher in Pennsylvania, Office of Education, Bulletin 1921, No. 34).

'Real' salaries of urban teachers fell sharply during World War I but recovered very rapidly thereafter; on the average they increased two-thirds between 1918 and 1928 (and dollar salaries doubled). Thereafter the cost of living fell sooner and further than salaries, so real salaries rose another sixth by the early 'thirties. They maintained this level throughout the decade as dollar salaries kept pace with the rise in the cost of living.

Salaries have been increasing at an increasing rate since 1940; the average salaries in cities with over 2,500 inhabitants are given in the adjoining table. The large increases between 1945 and 1949 have almost fully restored these teachers' real salaries to their prewar level, as was true in the four years after World War I.

	1941	*1943*	*1945*	*1947*	*1949*
Elementary school teachers	$1,917	$1,996	$2,227	$2,552	$3,185
High school teachers	2,338	2,418	2,740	3,026	3,672

Calculated from NEA Research Bulletins, March 1941, Feb. 1943, Feb. 1945, Feb. 1947, Apr. 1949. The reports by individual cities are incomplete but cover more than half the city teachers and appear to be fairly comparable from year to year. As large cities are relatively overrepresented, the averages are higher than those for all teachers.

The present postwar rise in salaries, like that after World War I, has been accompanied by, and to a considerable degree occasioned by, widespread publicity emphasizing the loss of teachers to other occupations, the fall in real incomes, etc. The prominent role of teacher unions, however, is distinctly recent. Much the largest of these unions is the American Federation of Teachers (AFL), founded in 1916. Before 1934 this union was very small; thereafter it participated in the general expansion of union membership. In 1947 it had 42,000 paid-up members, perhaps a ninth of city school teachers.[43] The national union has been opposed to the use of the strike, but some locals (beginning with St. Paul in 1946) have resorted to this weapon. The most important strikes have been in St. Paul, Buffalo, Minneapolis, and Providence. The strike has been outlawed in some states, and it (and unionization of teachers) is opposed by the National Education Association (the professional society to which more than half the country's teachers belong), so its future role in salary determination is problematical.

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[42] For a fuller discussion of this problem, see Part 2, Section 4.

[43] For the membership each year since 1916, see *American Teacher*, Oct. 1947, p. 11.

FACTORS AFFECTING COMPARISONS WITH TEACHERS' SALARIES

Direct comparisons of teachers' salaries with those in other occupations (except college teaching) must take into account three factors peculiar to teachers' salaries: exemption from federal income taxation before 1939, the length of the working year, and the role of pensions.

The first factor, tax exemption, was of relatively small importance because before 1939 personal exemptions were large ($1,000 for individuals and $2,500 for a husband and wife during most of the period) and the initial tax rate was low (4 percent on the first $4,000 of taxable income in 1938). The savings to single teachers from tax exemption would, therefore average about 1 or 2 percent of income plus the perplexities of filing a return.

The second factor, length of the school year, is much more substantial. In 1940 public schools were in session an average of 175 days or 35 five-day weeks, but vacations within terms lengthened the period between the opening and closing of school to about 9 months. In addition, the hours of work per week in teaching (which may, however, include only work at school) were less than the average for the labor force.[44]

For purposes of comparison with other occupations it is difficult to place a monetary value on the long vacation.[45] A common practice is to compare salaries with those in other occupations on a weekly or monthly basis,[46] which is equivalent to valuing the summer vacation at the salary rate. If we adopt this convention, urban teachers' salaries on an annual basis would be about

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[44] During March 24-30, 1940, 82.4 percent of female teachers worked 40 hours or less; 57.5 percent of all female workers worked 40 hours or less.

[45] The very unsatisfactory data in this field suggest that relatively few teachers take advantage of the vacation to earn supplementary income; see, for example, The Rural Teacher's Economic Status, NEA Research Bulletin, Jan. 1939.

[46] See W. Randolph Burgess, *Trends of School Costs* (Russell Sage Foundation, 1920).

12/9 = 1.33 of reported salaries and rural teachers' salaries about 12/8.4 = 1.43 of reported salaries.[47]

The varying length of the school year affects the comparison of periods and groups of teachers. The more important differences are:

1) Through time. Since the school term has been lengthening, a portion of the salary increases is for more work. Conversely, since school terms did not change appreciably after 1940 (the term was 35.1 weeks in 1944), comparisons with other occupations in which overtime was common during the war should be qualified on this score.

	1900	*1910*	*1920*	*1930*	*1940*
School term (weeks)	28.9	31.5	32.4	34.5	35.0
Annual salary ($)					
Current	311	463	871	1,420	1,441
Equivalent for 175-day school year	377	514	941	1,440	1,441

2) Between rural and urban areas. In 1940 school terms were 2.8 weeks shorter in rural than in urban areas. Annual rural salaries were 49.1 percent of urban salaries; on a weekly basis they were 53.2 percent of urban salaries.

3) Among states. There is a fairly high correlation between salary and length of the school year in rural schools,[48] but variations in both are due primarily to differences in the wealth of the states. The variation among states in salaries is only slightly greater for annual salaries than for salaries per week.

The third factor, pensions and retirement plans, is most difficult to assess. The first plan was introduced in New York City in 1894; coverage has extended gradually until about two-thirds of public school teachers were covered by 1937 and almost all by 1944.[49] Retirement allowances vary widely, but the most common pension is about half the average salary in the years immediately preceding retirement, provided the teacher has served 20 to 30 years.

The net contribution of these retirement provisions to the teacher's income cannot be estimated with any accuracy. In the first two decades virtually no such plan was on an actuarial basis,[50] and many systems still do not provide for growing liabilities. The teacher's contribution may therefore be half of current contributions to the pension fund (it actually averages somewhat less), and still pay only a quarter of the pension. As a very rough estimate, pensions add another five to ten percent to the current salaries of teachers.

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[47] Urban schools were in session in 1940 an average of 36.3 weeks; rural schools, 33.5 (in both cases 3 weeks have been added for intra-term vacations).

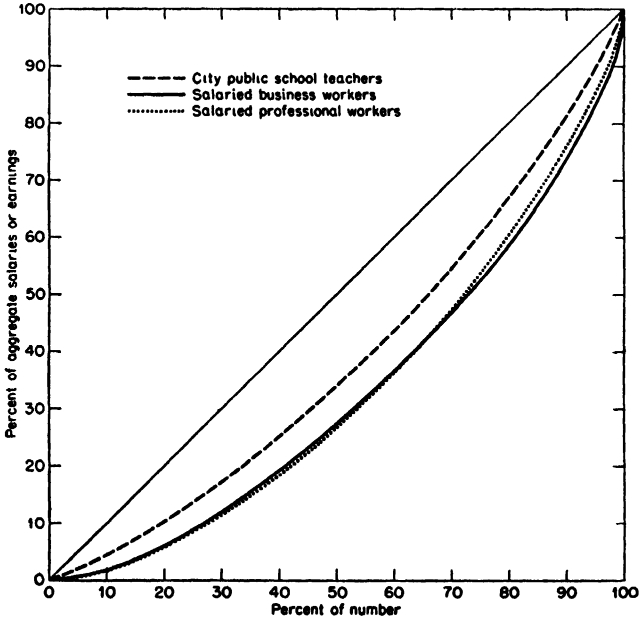
[48] In 1940 in 41 states for which these data were available, the rank correlation coefficient was .58.

[49] Teacher Retirement Systems and Social Security, NEA Research Bulletin, May 1937, p. 94; Statistics of State and Local Retirement Systems, 1943-44, *ibid.*, April 1945, p. 31.

In addition, there are two related characteristics of teachers' salaries that are not nearly as pronounced in private employment. The first is security of tenure: in many city systems, particularly, the tenure of the teacher has been so strongly protected by legislation that the possibility of discharge is remote. The second is the equality of their salaries. The Lorenz curve of urban teachers' salaries may be compared with those of salaried business and professional workers in Minnesota in 1938-39 (Figure 3).

Figure 3

Lorenz Curves of Salaries of City Public School Teachers and of Earnings of Salaried Business and Professional Workers in Minnesota, 1938-1939



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[50] In 1914 the New York City system had liabilities of $70 million and assets of $15 million. On the early systems, see Paul Studenski, *Teachers' Pension Systems in the United States* (Appleton, 1920), Ch. I.

It is evident that the prospects of a salary much different from the average in the occupation is small in teaching relative to business and professional employment. The effects of these characteristics, which are equally prominent in college teachers' salaries, will be discussed in Part 2.

COMPARISONS WITH OTHER OCCUPATIONS

Only a few occupations compete with teaching for college trained women on a large scale: the largest are stenographers, typists and secretaries; nurses; and other clerical workers (see Table 14). None of these occupations, moreover, is more than one-quarter staffed by college trained women. Male teachers, on the other hand, are a small proportion of college trained men: 2.5 percent of those who attended college 1 to 3 years, and 9.9 percent of those who attended college 4 or more years, were in elementary and secondary teaching in 1940.

TABLE 14

Educational Training of Women in Selected Occupations, 1940

OCCUPATION	NUMBER (000)	% OF THOSE IN OCCUPATION WHO ATTENDED COLLEGE	% OF ALL ATTENDING COLLEGE	
			1-3 years	4 or more years
All	11,279	15.0	100.0	100.0
Teachers	769	87.7	29.3	52.1
Stenographers	1,001	22.0	16.7	7.9
Clerical	697	15.4	7.7	4.3
Nurses	361	25.5	7.4	2.8
Saleswomen	729	9.1	5.2	2.2

1940 Census, *Occupational Characteristics,* pp. 75 and 81.

The economic status of teachers has risen relative to the population as a whole in the last five decades. Between 1899-1908 and 1949 teachers' salaries rose from $340 to $2,750, or 709 percent.[51] Meanwhile per capita national income rose from $242 to $1,484, or 513 percent.[52] If we roughly divide the period at 1924-33, when the respective averages were $1,341 and $581, we find that teachers' salaries rose much more rapidly than per capita income in the earlier period (294 vs. 140 percent) and more slowly in the later period (105 vs. 155 percent). Trends in the salaries of

[51] Table 13, and NEA Research Bulletin, Dec. 1949.

[52] Simon Kuznets, *National Product since 1869* (NBER, 1946), Tables II-16, 17; *Survey of Current Business,* Feb. 1950. Kuznets' figures are for national product; in 1929-38 they average $486 per capita whereas Department of Commerce data for national income average $488.

public school and college teachers are compared in more detail in Part Two.

The average salary of school teachers is relatively meaningless unless compared with salaries or earnings in fairly similar occupations, and unfortunately there are few such occupations, and fewer with adequate data. The work of college teachers is similar in many respects, and we compare their absolute salaries also in Part Two. A sample from this comparison, given in Table 15, indicates that the salaries of college teachers have averaged about $1,000 a year higher than those of public school teachers in the last two decades, and that the relative differential has been declining.

TABLE 15
Average Salaries of Urban Public School Teachers and College Teachers

	URBAN PUBLIC SCHOOL TEACHERS	COLLEGE TEACHERS
1928	$1,865	$3,045
1930	1,944	3,065
1932	1,951	3,111
1934	1,735	
1936	1,818	2,732
1938	1,952	2,861
1940	$1,955	$2,886
1942	2,013	2,892
1944	2,215	3,282
1946	2,545	3,429
1947	2,731	3,705
1948		4,098
1949	3,368	4,217

Sources: Teachers' salaries, Table 13; 1947 and 1949 from NEA Research Bulletins, Feb. 1947 and April 1949.
College teachers' salaries, Table 29 and text.

The largest number of college trained women in the labor force, outside the schools, is found in office work, but college trained women form less than one-fourth of the total (Table 14). We may offset this difference in educational training in good part by comparing teachers' salaries with salaries of the highest paid occupation reported in the large study of office workers recently made by the Bureau of Labor Statistics (Table 16).[53] In these fourteen cities, teachers' salaries consistently exceeded the salary of hand bookkeepers, without any allowances for longer vacations, pensions, or security of tenure.

The rising trend of teachers' salaries since 1900 can be explained at least in part by the increasing proportion of teachers in high schools and by the lengthening of the school year. The higher standards of academic training and the increasing propor-

[53] In an earlier study of office workers, it was reported that educational training had little influence on salaries; see Office Work in Philadelphia, 1940, U. S. Women's Bureau, Bulletin 188-5 (1942), p. 83.

TABLE 16

Salaries of Classroom Teachers and 52-week Salaries of Women Hand Bookkeepers, 1949

CITY	TEACHERS	BOOKKEEPERS	CITY	TEACHERS	BOOKKEEPERS
Atlanta	$2,632	$2,600	New Orleans	$3,204	$2,366
Boston	3,756	2,470	New York	4,618	3,120
Chicago	4,061	2,886	Philadelphia	3,642	2,574
Cleveland	3,684	2,938	Portland, Ore.	3,353	3,120
Hartford	3,996	2,652	Richmond	3,110	2,626
Los Angeles	4,294	3,250	Seattle	3,734	2,886
Minn.-St. Paul	3,847	2,340	St. Louis	3,533	2,392

Sources: Teachers' salaries, average of kindergarten, elementary, junior high school and high school teachers; NEA Special Salary Tabulations, 1-A, April 1949.
Office workers' salaries, Salaries of Office Workers in Large Cities, 1949 (BLS, Bulletins 960-1, 960-2, 960-3, 1949). Salaries are for January, February, or March 1949.
Hand bookkeeper "keeps a set of books for recording business transactions . . ."

tion of teachers in large cities may also have contributed to this result, although similar changes took place in the working population as a whole. As to the markedly higher salaries of teachers than of office workers we do not possess sufficient information to estimate the individual importance of factors such as differences in ability, relative social advantages of the two kinds of work, and differing determinants of salaries in private and public employment.

PART TWO

Higher Education

1 *Number of Teachers*

Since 1900 college professors have multiplied at a rate that is surely unprecedented in the history of established professions (Table 17 and Figure 4). By 1940 academic staffs were five times as large and enrollments six times as large as in 1900. Only one brief and mild interruption of growth (in 1933-34) has occurred in peacetime.[1] In addition to an academic staff of almost 150,000

TABLE 17

Enrollments and Academic Employees in Higher Education (thousands)

	TEACHING STAFF	OTHER ACADEMIC EMPLOYEES	TOTAL ACADEMIC EMPLOYEES	ENROLLMENTS Total	ENROLLMENTS % of population 18-21 incl.
1900	26.5	2.5	29.0	238	4.0
1905	32.9	3.9	36.8	264	4.0
1910	39.5	5.5	45.0	355	4.8
1915	43.6	6.9	50.5	404	5.5
1918	48.4	8.3	56.7	441	6.0
1920	52.5	9.5	62.0	598	8.1
1922	60.6	11.5	72.1	681	8.9
1924	68.8	13.6	82.4	823	10.3
1926	76.5	15.7	92.2	917	11.0
1928	81.7	17.5	99.2	1,054	12.1
1930	86.2	19.2	105.4	1,101	12.2
1932	90.1	20.8	110.9	1,154	12.6
1934	88.5	20.4	108.9	1,055	11.5
1936	98.1	22.9	121.0	1,208	13.0
1938	110.3	25.7	136.0	1,351	13.3
1940	118.4	28.5	146.9	1,494	15.6
1942	122.5	28.6	151.1	1,404	14.2
1944	112.0	39.0	151.0	878[a]	9.2
1946	130.1	35.2	165.3	1,677[b]	17.9

Source: Appendix C. 'Other academic employees' include those in administration, full-time research, etc.

[a] Civilian only; also 806,000 students in military programs (of which 277,000 were full year students, 529,000 short course students).

[b] Including 462,000 veterans.

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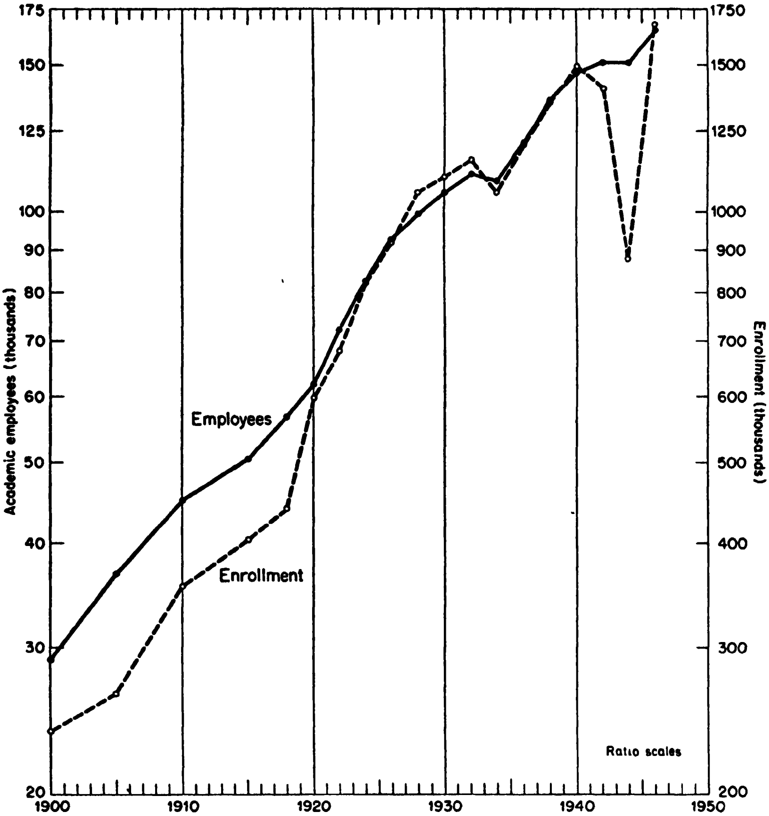
[1] Annual enrollments in selected institutions confirm this statement, and also reveal a moderate decrease during World War I; see W. A. Lunden, *The Dynamics of Higher Education* (Pittsburgh Printing Company, 1939), p. 242.

Figure 4

Academic Personnel and Enrollments in Institutions of Higher Education 1900 - 1946



in 1940, the institutions had a large but unknown number of nonacademic employees.[2]

During the war civilian enrollments fell to almost half their 1940 level, and after 1945 with the influx of veterans quickly soared to almost twice the prewar level.[3] The enrollment of

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[2] The number of nonacademic employees is probably at least half the number of academic employees, if we may judge by fragmentary data (e.g., in 1940 at the University of Minnesota clerical and service employees numbered half academic employees; at Columbia University the fraction was seven-eighths).

[3] Office of Education, Statistical Circular, Nov. 20, 1946; Circular 238, Nov. 10, 1947; Higher Education, Dec. 15, 1949. Autumn enrollments run somewhat under the number reported as regular students in Table 17.

	ENROLLMENTS (THOUSANDS)		
	CIVILIAN COURSES		MILITARY COURSES
AUTUMN	Nonveterans	Veterans	
1939	1,360		
1941	1,263		
1943	738		294
1945	952	*	88
1946	998	1,080	
1947	1,215	1,123	
1948	1,386	1,022	
1949	1,600	856	

*Not reported separately; about 25,000.

nonveterans has returned to its prewar ratio to the population 18-21 inclusive.

College faculties decreased much less than civilian enrollments during the war, in part because of the expansion of nonteaching activities (research, extension work, etc.), in greater part because of the large number of students in military programs.[4] Teaching staffs have doubtless expanded greatly since the war: in the land-grant institutions (which before the war employed about a fifth of all college teachers) the number increased 69 percent from 1946 to 1949.

2 *Institutions of Higher Education*

Although our primary concern is with college teachers, we describe briefly by way of background the characteristics of the 1,700 institutions of higher education employing them in 1940. These institutions are a heterogeneous group: their single common characteristic is that their students have completed high school or its equivalent.

Almost half of the institutions are colleges or universities (chiefly 4-year, nonprofessional schools—the designation of college or university is self-chosen and bears no obvious relationship to observable differences in many cases), and well over half of these are still under denominational control (Table 18). Junior colleges (i.e., 2-year schools) have sprung up in large number in the last twenty-five years, and in part because of their recent development a much larger proportion (almost half) are publicly controlled.

A more informative picture of the institutions of higher education can be obtained from Table 19, where average enrollments,

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[4] In addition to the 277,000 students in full year military courses in 1943-44, there were 529,000 students in short term military courses.

TABLE 18

Classification of Institutions of Higher Education by Type of Control, 1940

TYPE OF INSTITUTION	PUBLIC CONTROL State	PUBLIC CONTROL Local	PRIVATE CONTROL Nondenominational	PRIVATE CONTROL Protestant	PRIVATE CONTROL Catholic	TOTAL
College or university	111	15	176	292	140	734
Professional school	19	1	157	67	19	263
Teachers college	156	8	12	1	4	181
Normal school	30	5	17	6	4	62
Junior college	38	173	91	118	39	459
All	354	202	453	484	206	1,699

Source: Office of Education, *Educational Directory*, Bulletin 1940, No. 1.

faculty, and expenditure are given.[5] Colleges and universities were only 43.5 percent of all institutions, but had 71.3 percent of the students, 74.2 percent of all faculty, and spent 78.2 percent of all instructional expenditure.

Public colleges and universities are on the average more than four times as large as private. But there is enormous variation within each class: the largest public college had 30,614 students,

TABLE 19

Enrollments, Faculty, and Expenditures of Institutions of Higher Education, 1940

TYPE OF INSTITUTION	NUMBER	ENROLLMENT	FACULTY	EXP. ($000)	RATIO: EXP. TO NO. OF Students	RATIO: EXP. TO NO. OF Faculty members
Public			AVERAGES			
Colleges & universities	125	3,914	350	1,645	$420	$4,699
Professional & technological	17	838	97	469	559	4,833
Teachers colleges & normal schools	197	842	57	214	254	3,758
Junior colleges	217	494	24	75	152	3,125
Private						
Colleges & universities	597	930	87	366	391	4,209
Professional & technological	227	364	40	161	443	4,030
Teachers colleges & normal schools	40	216	26	71	327	2,713
Junior colleges	239	172	21	54	315	2,581
Public		PERCENTAGES OF AGGREGATE				
Colleges & universities	7.5	33.4	33.9	37.9		
Professional & technological	1.0	1.0	1.3	1.5		
Teachers colleges & normal schools	11.9	11.3	8.7	7.8		
Junior colleges	13.1	7.3	4.0	3.0		
Private						
Colleges & universities	36.0	37.9	40.3	40.3		
Professional & technological	13.7	5.6	7.0	6.7		
Teachers colleges & normal schools	2.4	.6	.8	.5		
Junior colleges	14.4	2.8	3.9	2.4		
Total	100.0	99.9	99.9	100.1		

[5] The numbers in Table 19 are smaller than those in Table 18 because not all institutions report to the Office of Education.

the smallest, 114; the largest private university had 36,126 students, the smallest private college, 32. Twenty-six private and 38 public colleges and universities had enrollments of 4,000 or more; together they had about 700,000 of the 1,040,000 students in all colleges and universities. In other words, the largest 9 percent of the institutions had about 70 percent of the students.

Public institutions increased in relative importance before 1920, and thereafter maintained a stable proportion of total enrollments (Table 20).[6] More detailed data indicate that enrollments in teachers colleges and normal schools have fallen off sharply relative to those in colleges, universities, and technical schools. An investigation of the cause of the shift toward public schools is not within our scope, but we may pause to notice one factor that reflects many others. The fees of public institutions are and have long been substantially less than those of private institutions (except in certain denominational schools), although fees have increased more rapidly in public schools and especially rapidly for non-resident students (Table 21).

TABLE 20

Enrollments in Institutions of Higher Education

	PUBLIC INSTITUTIONS	PRIVATE INSTITUTIONS	TOTAL
	NUMBER (THOUSANDS)		
1900	91	146	238
1920	309	289	598
1930	537	564	1,101
1940	797	698	1,494
	PERCENTAGE DISTRIBUTION		
1900	38.5	61.5	100.0
1920	51.6	48.4	100.0
1930	48.8	51.2	100.0
1940	53.3	46.7	100.0

Source: Report of the President's Commission on Higher Education, Part VI. Table 22.

The difference in fees reflects differences in the resources of the two types of institution: private institutions draw more than half their current income from student fees, public institutions less than one-fifth; public institutions receive seven-tenths of their current income from governmental appropriations, private institutions less than one-twentieth (Table 22). Endowments have been growing much more slowly than enrollments, the rate of return on endowment has fallen almost a fifth since 1926, and

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[6] Public institutions began to become important after the Civil War; 42 of the land-grant colleges were founded between 1860 and 1890 (Lunden, *op. cit.*, p. 180).

TABLE 21

Average Annual Tuition Fees in Arts Colleges

	STATE INSTITUTIONS		PRIVATE INSTITUTIONS	COST OF LIVING INDEX (1935-39:100)
	Resident students	Non-resident students		
1900	$15	$22	$130	52.6
1901	15	22	130	54.7
1902	16	26	130	55.7
1903	17	30	130	57.3
1904	17	30	131	59.9
1905	17	30	132	59.3
1906	17	30	132	59.3
1907	18	31	133	61.9
1908	18	31	133	65.0
1909	18	34	133	62.4
1910	18	35	133	62.4
1911	19	41	135	66.0
1912	19	41	135	68.1
1913	21	44	135	68.6
1914	23	51	136	70.7
1915	25	52	140	72.6
1916	25	56	146	74.0
1917	27	61	161	82.4
1918	28	62	162	97.8
1919	30	64	169	118.0
1920	33	69	203	135.3
1921	45	108	253	138.3
1922	48	120	265	123.6
1923	49	121	275	120.4
1924	49	122	289	123.5
1925	50	122	289	123.2
1926	50	123	327	128.2
1927	52	124	339	126.1
1928	52	125	341	123.8
1929	58	126	379	122.4
1930	58	126	379	122.8
1931	58	140	389	115.3
1932	59	140	391	104.2
1933	60	149	398	93.5
1934	66	180	399	93.9
1935	68	183	400	96.2
1936	68	183	407	98.0
1937	70	188	409	99.8
1938	70	194	409	103.0
1939	70	194	409	100.2
1940	73	198	412	99.6
1941	80	211	419	100.7
1942	80	212	431	110.5
1943	83	217	430	120.4
1944	85	221	431	124.4
1945	89	253	423	127.0
1946	85	249	435	129.9
1947	87	263	493	153.3
1948	104	299	526	167.0
1949	104	324	586	171.4

Notes on page 35

TABLE 22

Current Income of Institutions of Higher Education, 1940

	AGGREGATE INCOME (MILLIONS)		% DISTRIBUTION	
SOURCE	Private	Public	Private	Public
Student fees	$145.9	$55.0	52.9	18.6
Endowment earnings	64.6	6.7	23.4	2.3
Private gifts	35.3	5.1	12.8	1.7
Federal government	2.4	36.5	.9	12.4
State government	7.7	143.5	2.8	48.6
Local government	.2	24.2	.1	8.2
Sales of services	12.5	20.3	4.5	6.9
Miscellaneous	7.4	4.0	2.7	1.4
Total	275.9	295.4	100.1	100.1

Source: *Biennial Survey, 1938-40* and *1940-42,* II, Ch. IV, p. 38.

inflation has reduced real income from endowment to its lowest level in two decades.[7]

3 *Recruitment and Promotion*

The training of college teachers is considerably less formalized than that of elementary and secondary school teachers: there is only one conventional requirement for professorial appointment, the Ph.D., and it is not, and, as we shall see, could not have been, universally enforced. The general information available, however, suggests that college teachers form a relatively homogeneous group: chiefly male;[8] almost exclusively white (96.8

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[7] Information on endowment and its earnings in 45 large private institutions is given by J. Harvey Cain, *College Investments under War Conditions* (American Council on Education, Washington, D. C., Sept. 1944).

	1926	*1932*	*1935*	*1940*	*1943*
Principal ($ mil.)	372	575	565	653	702
Income ($ mil.)	19.2	29.3	25.0	28.9	29.8
% return	5.14	5.06	4.42	4.42	4.27

[8] The 1940 Census reports females as 26.6 percent of teachers in colleges. Women are concentrated in women's and teachers' colleges; in the private institutions with enrollments over 9,000 and the public institutions with enrollments over 13,000 (each 9 in number), only 16.7 percent of the teachers were women in 1940.

Notes to Table 21

TUITION FEES

State institutions: California (Berkeley), Michigan, Minnesota, Ohio State, Texas, Wisconsin.

Private institutions: Brown, Chicago, Columbia, Harvard, Princeton, Stanford, Yale.

COST OF LIVING INDEX

To 1913: P. H. Douglas, *Real Wages in the United States* (Houghton Mifflin, 1930), p. 41.

1913 on: Bureau of Labor Statistics. Before 1915 the index is for the calendar year. Thereafter, the index opposite a given school year is for the preceding December, e.g., 100.7 was the index for December 1940.

percent in 1940); with extraordinarily equal incomes (as we shall see later); and coming chiefly from middle and working class families.[9]

FORMAL ENTRANCE REQUIREMENTS

Teachers in colleges and universities are usually required to be graduates of 4-year, degree-conferring institutions (and hence possessors of some kind of bachelor's degree). (The exceptions are chiefly in music, art, and foreign languages.) In addition, to be appointed to a professorial rank in a good institution, it is usually necessary to possess a Ph.D.; some indication of this is provided by an analysis of faculty members' degrees in four

TABLE 23

Percentage of Faculties of the Liberal Arts Colleges Holding the Ph.D. Degree

COLLEGE AND RANK	*1900*	*1910*	*1920*	*1930*	*1940*
Columbia					
Professor	75.9	76.0	83.3	85.3	87.1
Associate Professor	(50.0)	72.7	81.8	90.5	66.7
Assistant Professor	X	X	53.3	61.5	83.3
Instructor	66.7	84.6	41.7	25.5	52.9
Oberlin					
Professor	41.2	57.9	75.0	83.3	90.0
Associate Professor	(100.0)	54.5	57.1	(87.5)	(100.0)
Assistant Professor	X	X	61.5	26.3	81.0
Instructor	(14.3)	7.1	(0.0)	14.3	41.7
Smith					
Professor	17.4	56.7	64.3	71.9	73.3
Associate Professor	(100.0)	52.6	51.9	42.2	47.5
Assistant Professor	X	X	25.6	30.4	52.8
Instructor	33.3	30.8	19.2	20.0	35.9
University of Illinois					
Professor	59.1	79.2	90.7	98.4	95.0
Associate Professor	(33.3)	90.9	100.0	90.6	91.1
Assistant Professor	(28.6)	92.0	96.7	93.0	96.5
Instructor	21.4	67.3	72.2	81.0	83.8

X: Rank did not exist.

Source: College announcements. Columbia faculty is that of Columbia College, the men's undergraduate school. Percentages in parentheses based on 10 or fewer persons.

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[9] A study in the mid-thirties of about 4,600 college teachers who were members of the American Association of University Professors gives the occupation of fathers.

Business man	26.6 percent	Lawyer or physician	9.2 percent
Farmer	24.7 percent	Professor	3.9 percent
Manual worker	12.1 percent	Chemist or engineer	3.0 percent
Clergyman	10.6 percent	Other	4.8 percent
Teacher	5.1 percent		

(B. W. Kunkel, A Survey of College Faculties, Bulletin of the Association of American Colleges, Dec. 1937, p. 510).

institutions (Table 23). Seven-eighths of the assistant professors in these schools, other than those in art, music, and foreign languages, possessed the Ph.D. degree in 1940. But this requirement is recent, and far from generally met by older professors: probably only a third of the teachers in institutions of higher learning in 1940 were Ph.D.'s, and indeed the aggregate number of Ph.D.'s conferred in the United States since 1896 (when the honorary Ph.D. was virtually abolished by general convention) is probably less than half the number of persons holding professorial rank at present.[10]

The formal requirements for the Ph.D. are typically three: two years of graduate study at the institution from which the degree is to be obtained; passage of oral or written examinations on designated subject matter and demonstration of ability to read, with the aid of a dictionary, two foreign languages; and the completion of a dissertation which, in the faculty's opinion, is an original and significant contribution to knowledge. These requirements, the young graduate student often believes, can be fulfilled in three, or at most four, years; and so they can. But because of the migration of graduate students among universities, concurrent employment (often as an instructor), and innumerable personal factors, the average period is two or three times as long (Table 24). The median period is somewhat shorter (10

TABLE 24

Average Period between B.A. and Ph.D. for Recipients of the Ph.D. at Columbia and Harvard, 1900-1940

FIELD AND INSTITUTION	*1900*	*1910*	*1930*	*1940*
Natural Sciences				
Columbia	7.6	8.0	9.4	9.2
Harvard	6.8	8.3	6.2	6.1
Social Sciences				
Columbia	4.3	9.8	10.3	12.9
Harvard	4.8	4.5	10.5	8.7
Humanities				
Columbia	4.7	9.3	13.9	14.3
Harvard	6.3	9.2	7.9	8.8
All Fields				
Columbia	6.3	9.2	10.8	11.7
Harvard	6.2	8.4	8.0	7.8

Compiled from reports of the universities.

[10] The annual number of Ph.D.'s ('Doctor's Degrees' from 1940 on) conferred has risen rapidly in recent decades. The total (estimated by linear interpolation) conferred in the four decades 1900-40 numbered about 48,000.

1900	*1910*	*1920*	*1930*	*1940*	*1942*	*1944*
342	409	532	2,024	3,290	3,497	2,305

years at Columbia, 7 years at Harvard), but still sufficient to constitute the most protracted period of preparation in any profession.[11]

The restrictive effect on entry into college teaching of the Ph.D. requirement cannot be measured by the average period required to obtain it, of course. The prospective college teacher almost invariably begins his teaching before receiving his degree; fragmentary data suggest that full-time graduate study averages only about 2 years.[12] But even if income is usually earned during the apprenticeship, the fact that it is at a lower level in rank or class of institution and in salary is of considerable importance. Nor should the retrospective statistics we have necessarily employed obscure the fair probability that the graduate student will never receive the degree, and be handicapped in his professional career.

APPOINTMENT AND PROMOTION

We have little information on the methods of recruitment of instructors in private and small institutions, but in the land-grant colleges three-fifths of all instructors were employed by

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[11] The distribution of the recipients of Ph.D.'s in 1940 at Columbia and Harvard, by years between A.B. and Ph.D., is illuminating. We shall not digress to examine the reasons for the differences but one is obvious: the publication requirement at Columbia. Of those receiving the Ph.D. at Columbia in 1940, 55 percent passed their final oral examination on dissertation from 1 to 16 academic years earlier; the mean period for publication delay was .86 years, the median 1 year. The publication requirement was abolished at Columbia in 1949; Catholic University is apparently the only institution still requiring publication.

YEARS	COLUMBIA	HARVARD
2 to 4	0	13
4 to 6	25	40
6 to 8	21	31
8 to 10	19	26
10 to 12	15	14
12 to 14	12	8
14 to 16	10	11
16 to 20	23	5
20 to 30	12	1
30 to 40	2	0
Total	139	149

[12] An examination of 61 scattered entries in the Directory of American Scholars of persons receiving the Ph.D. 1930-39 indicates that the unemployed time between A.B. and Ph.D. averages 2.5 years. Since noneducational work is usually omitted, this is probably too high a figure, but on the other hand, this is a relatively successful group of teachers.

schools in which they received (or were receiving) some or all of their academic training in 1929 (Table 25).[13] At the higher ranks wider recruitment is practiced, but almost a third of even the full professors received all or part of their training at the institution at which they are employed. If the recent experience of the University of Illinois is at all typical, promotion is much the most important source of appointments to higher ranks: as of 1946, 82 percent of the new professorial appointments since 1940 were promotions; and 80 percent of the new associate professorships (Table 26). (However, in a period of rapid increase in number, external hiring is no doubt more common.)

TABLE 25

Inbreeding in Land-Grant Colleges Measured by Percentage of Faculty Who Received All or Part of Their Academic Training at the Institution in Which They are Employed

TYPE AND PORTION OF TRAINING RECEIVED AT SCHOOL WHERE EMPLOYED	RANK OF FACULTY			
	Prof.	Assoc. Prof.	Asst. Prof.	Instr.
Undergraduate				
All	15.3	20.0	23.5	28.5
Part	6.1	6.9	8.2	10.6
	21.4	26.9	31.7	39.1
Graduate				
All	9.1	14.0	20.5	30.6
Part	15.9	20.9	19.6	22.2
	25.0	34.9	40.1	52.8
Graduate & Undergraduate				
All	6.3	8.9	13.0	18.8
Part	25.8	32.6	33.6	40.3
	32.1	41.5	46.6	59.1

Source: J. H. McNeely, Faculty Inbreeding in Land-Grant Colleges and Universities, Office of Education, Pamphlet 31 (1932). The data apparently refer to 1929.

It is not difficult to list reasons why the land-grant colleges may be atypical. For example, having graduate schools, they train college teachers; on the other hand, being large institutions, they place relatively heavier weight on research accomplishments, which may work the other way. The direction of net bias is not clear, but the majority of initial appointments in all types of institutions is probably persons who were or are students.

[13] See also Report of Committee B, Methods of Appointment and Promotion, Bulletin of the American Association of University Professors, XV (1929), 175-217.

TABLE 26

Faculty by Rank, University of Illinois, 1940 and 1946

	RANK IN 1946				NOT TEACHING	
RANK IN 1940	Prof.	Assoc. Prof.	Asst. Prof.	Instr.	Emeritus	Elsewhere
Professor	118				22	11
Associate Professor	43	22			2	2
Assistant Professor	16	51	22		1	18
Instructor	2	18	81	59	2	124
Not present	13	17	55	145		

Compiled from Minutes of Trustees. Instructors include associates and assistants.

The average college teacher has taught in two or three institutions during his academic life. The extensive survey of AAUP members already referred to gives a tabulation of teachers between the ages of 50 and 60 (when additional moves are uncommon), by number of colleges in which they have taught: 24.3 percent taught in one college; 29.4 percent in two colleges; 24.9 percent in three colleges; 21.2 percent in four or more colleges.[14]

TABLE 27

Faculty by Rank in Universities and Colleges and in Professional Schools, State of New York
Percentage Distribution

	PROFESSOR	ASSOCIATE & ASST. PROFESSOR	INSTRUCTOR & TUTOR	OTHER
	UNIVERSITIES AND COLLEGES			
1905	35.0	13.2	27.3	24.6
1910	34.8	13.7	25.9	25.6
1915	32.4	20.1	26.2	21.2
1920	31.5	20.2	26.7	21.5
1925	28.8	21.7	29.8	19.7
1930	24.4	23.2	32.4	20.0
1935	21.4	25.8	30.6	19.4
1940	19.1	27.1	29.5	24.3
1945	20.9	30.0	28.2	20.8
	PROFESSIONAL SCHOOLS			
1905	36.6	7.7	28.4	27.3
1910	36.5	10.4	27.6	25.4
1915	33.5	13.7	30.2	22.7
1920	37.1	14.0	27.8	21.1
1925	34.4	18.1	34.3	13.2
1930	32.3	20.6	29.8	17.2
1935	29.7	21.0	33.2	16.1
1940	25.3	23.5	32.2	19.0
1945	22.3	29.5	31.8	16.4

Source: Annual Reports of University of the State of New York (Albany). Professional schools include architecture, dentistry, engineering, law, pharmacy, and theology; medical schools are omitted because of the large part-time faculty.

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[14] Kunkel, *op. cit.*, p. 499. A third of these teachers had taught also in one or more elementary or secondary schools.

The full professors in this sample had attained their present rank by the age of 36.7 years on the average—about 14 years after receiving their B.A. and 5 years after receiving their Ph.D. (which seven-tenths of them possessed).

The intermediate professorial ranks were relatively unused at the beginning of the century, but have grown rapidly in popularity—with colleges if not with all college teachers. The distribution of faculties by ranks in institutions in New York State shows a steady decline in the relative number of professors, and an offsetting increase in the relative number of associate and assistant professors, since 1905 (Table 27). The rise in the total number of college teachers has been so rapid, however, that one cannot infer that the professorial rank is being attained at a progressively higher age; indeed, since World War II it is probable that the proportion of full professors and their average age have both declined substantially.

4 *Salaries and Earnings*

A professor of moral philosophy once remarked of "that unprosperous race of men commonly called men of letters":

"Before the invention of the art of printing, a scholar and a beggar seem to have been terms very nearly synonymous. The different governors of the universities before that time appear to have often granted licenses to their scholars to beg."[15]

In this age of specialization, the mendicant functions have been restricted to the college presidents, but the belief in professional poverty continues to be widely diffused. We shall deal with this subject in as much detail as the fragmentary data permit, emphasizing the trend and structure of salaries, and comparisons with other professions.

TREND OF SALARIES

The larger public universities and colleges are the only relatively homogeneous class of institutions for which we have information over a substantial period. The information for earlier and later periods is not strictly comparable, but the broader movements of salaries appear to be reliably portrayed by Table 28 and Figure 5.

Salaries in current dollars had an upward drift before the first World War, but were roughly stable in purchasing power. From

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[15] Adam Smith, *The Wealth of Nations* (Modern Library Ed.), pp. 131-2.

TABLE 28

Median Salaries of College Teachers in Large Public Institutions

	CURRENT DOLLARS				DOLLARS OF 1935-39 PURCHASING POWER			
	Prof.	Assoc. Prof.	Asst. Prof.	Instr.	Prof.	Assoc. Prof.	Asst. Prof.	Instr.
1908	2,279	1,646	1,451	891	3,506	2,532	2,232	1,371
1909	2,415	1,670	1,429	898	3,870	2,676	2,290	1,439
1910	2,417	1,737	1,438	924	3,873	2,784	2,305	1,481
1911	2,368	1,834	1,493	1,016	3,588	2,779	2,262	1,539
1912	2,382	1,791	1,503	984	3,498	2,630	2,207	1,445
1913	2,463	1,763	1,511	1,013	3,590	2,570	2,203	1,477
1914	2,530	1,862	1,567	1,008	3,579	2,634	2,216	1,426
1915	2,580	1,883	1,584	1,074	3,554	2,594	2,182	1,479
1916	2,558	1,871	1,619	1,096	3,457	2,528	2,188	1,481
1917	2,661	1,944	1,648	1,115	3,229	2,359	2,000	1,353
1918	2,677	2,012	1,714	1,114	2,737	2,057	1,753	1,139
1919	2,812	2,183	1,766	1,231	2,383	1,850	1,497	1,043
1920	3,262	2,447	2,022	1,508	2,411	1,809	1,494	1,115
1921	3,616	2,744	2,334	1,653	2,615	1,984	1,688	1,195
1922	3,835	3,007	2,484	1,794	3,103	2,433	2,010	1,451
1923	3,952	3,049	2,548	1,826	3,282	2,532	2,116	1,517
1924	4,009	3,084	2,548	1,888	3,246	2,497	2,063	1,529
1926	4,112	3,160	2,630	1,924	3,207	2,465	2,051	1,501
1927	4,230	3,197	2,675	1,908	3,354	2,535	2,121	1,513
1928	4,327	3,298	2,739	1,952	3,495	2,664	2,212	1,577
1929	4,348	3,359	2,691	2,003	3,552	2,744	2,198	1,636
1930	4,407	3,345	2,775	1,995	3,589	2,724	2,260	1,625
1931	4,480	3,418	2,815	2,069	3,886	2,964	2,441	1,794
1932	4,505	3,379	2,800	2,005	4,323	3,243	2,687	1,924
1935	3,775	2,903	2,449	1,769	3,924	3,018	2,546	1,839
1936	3,951	2,973	2,486	1,792	4,032	3,034	2,537	1,829
1937	4,166	3,144	2,556	1,842	4,174	3,150	2,561	1,846
1938	4,163	3,189	2,592	1,892	4,045	3,096	2,517	1,837
1940	4,245	3,272	2,605	1,937	4,262	3,285	2,615	1,945
1942	4,302	3,324	2,645	1,862	3,893	3,008	2,394	1,685

For salaries, see Appendix D; for implicit cost of living index, see Table 21. Data were not collected in the missing years.

the threshold of World War I (1914) to that of World War II (1940), salaries increased two-thirds to three-quarters for the various ranks of professors, and almost doubled for instructors. The upward movement was virtually unbroken except for the substantial decrease (averaging about 15 percent) from 1932 to

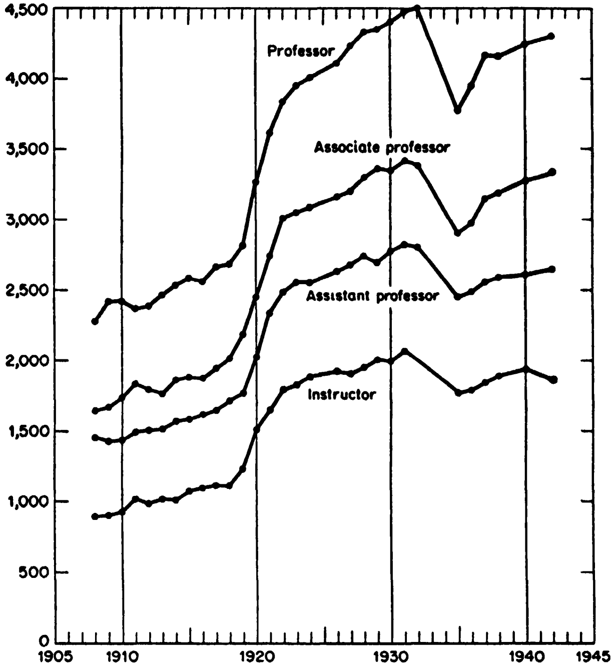
PERCENTAGE INCREASE, 1914-1940

RANK	CURRENT SALARY	REAL SALARY
Professor	67.8	19.1
Associate Professor	75.7	24.7
Assistant Professor	66.2	18.0
Instructor	92.2	36.4

Figure 5

Salaries of College Teachers in Large Public Institutions

1908 - 1942



1935; most or all of this decrease came in 1933 and 1934.[16] Two-thirds of the aggregate increase occurred in the four years immediately after World War I (1918-22).

When the current salaries are deflated by the cost of living index, a very different pattern emerges. From 1914 to 1940 'real' salaries rose only a fourth to a third as much as salaries in current dollars. They reached their minimum in 1919 or 1920, when they were about a third below those of 1914. Thereafter the decline in the cost of living and the rapid rise in dollar salaries led to a large increase in real salaries, so the 1914 level had been regained by all ranks between 1928 and 1930.[17] Real salaries continued to rise for two or three years, then fell very moderately, and by 1940 new peaks had been reached.

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[16] From the Office of Education surveys, Economic Outlook of Higher Education, by H. G. Badger, for 1933, 1934, and 1935, one may calculate means of percentage change in modal salaries of professors in public universities and colleges. They show decreases of about 8 percent in 1933 and 12.3 percent in 1934, and a slight rise in 1935—which is consistent with our 1932-35 change. See Circulars 58 (Sept. 1932) and 121 (Sept. 1933), and Pamphlet 58 (1934).

The relative structure of salaries by rank has been surprisingly stable. The extremes in fluctuations are suggested by the adjoining table (based on Table 28). There was an upward drift in the relative salaries of the lower ranks, especially of instructors, before and during World War I (if the less reliable data for this period can be trusted), but little apparent trend in the annual data thereafter.

RELATIVE SALARIES (PROFESSORS: 100)

	1914	*1919*	*1924*	*1929*	*1932*	*1937*	*1942*
Associate Professors	73.6	77.6	76.9	77.3	75.0	75.5	77.3
Assistant Professors	61.9	62.8	63.6	61.9	62.2	61.4	61.5
Instructors	39.8	43.8	47.1	46.1	44.5	44.2	43.3

A salary series for all ranks combined therefore differs in behavior through time from that of professors' salaries chiefly because of changes in the relative number in various ranks. The relative numbers are not known for these institutions, but we may use as approximate weights the distribution of faculty in colleges, universities, and technical schools in New York State. The combined salary series (Table 29 and Figure 8) has a less rapid

TABLE 29

Average Salaries of College Teachers in Large Public Institutions

	CURRENT DOLLARS	DOLLARS OF 1935-39 PURCHASING POWER		CURRENT DOLLARS	DOLLARS OF 1935-39 PURCHASING POWER
1908	1,656	2,548	1923	2,886	2,397
1909	1,728	2,769	1924	2,919	2,364
1910	1,746	2,798	1926	2,958	2,307
1911	1,763	2,671	1927	2,991	2,372
1912	1,748	2,567	1928	3,045	2,460
1913	1,785	2,602	1929	3,056	2,497
1914	1,821	2,576	1930	3,065	2,496
1915	1,861	2,563	1931	3,134	2,718
1916	1,860	2,514	1932	3,111	2,986
1917	1,923	2,334	1935	2,666	2,771
1918	1,943	1,987	1936	2,732	2,788
1919	2,068	1,753	1937	2,843	2,849
1920	2,410	1,781	1938	2,861	2,778
1921	2,661	1,924	1940	2,886	2,898
1922	2,834	2,293	1942	2,892	2,617

Salaries are from Table 28; distribution of faculty by rank from Table 27; cost of living index from Table 21. A simple average was taken of salaries of Associate and Assistant Professors.

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[17] Of course the standard of living had actually risen by 1930; the cost of living index does not reflect improvements in quality or the introduction of new products. Nor is the index, calculated for manual and clerical workers with smaller incomes, wholly appropriate to this profession.

upward trend because of the relative decline in full professors and increase in associate and assistant professors, but does not differ greatly from that for the individual ranks.

The representativeness of the large public institutions can be roughly tested as far as the trend of salaries is concerned. From 1914 to 1920 the average salary in a large number of private institutions rose from $1,724 to $2,279, or 32 percent—exactly the rise in public institutions.[18] From 1920 to 1927 the percentage increase in salaries in the large public institutions and in a broad sample of 305 institutions was again tolerably close.[19] One may conclude that at least through the 'twenties the trend of salaries in colleges and universities as a whole are fairly reliably portrayed by those in large public institutions.

Comprehensive salary information is not yet available for the war and postwar periods, but a fairly accurate extrapolation of Table 29 beyond 1942 can be made from payroll data.[20] Average salaries rose 46 percent from 1940 to 1949 but 'deflated' salaries

SALARIES IN LAND-GRANT INSTITUTIONS

	1942	*1943*	*1944*	*1945*	*1946*	*1947*	*1948*	*1949*
Average salary	$2,892	$2,988	$3,282	$3,236	$3,429	$3,705	$4,098	$4,217
Av. salary in 1935-39 purchasing power	$2,617	$2,482	$2,638	$2,548	$2,640	$2,417	$2,454	$2,460

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[18] Trevor Arnett, Teachers' Salaries, General Education Board, Occasional Paper 8, (1928) p. 17. The agreement was of course less miraculous for specific ranks.

PERCENTAGE INCREASE IN SALARIES, 1914-1920

	PUBLIC INSTITUTIONS	ARNETT SAMPLE
Professors	40.4	30.4
Instructors	24.6	26.4

Calculated from Arnett, Teachers' Salaries, General Education Board, Occasional Paper 7, (1921).

[19] The comparison by rank is as follows:

PERCENTAGE INCREASE IN SALARIES, 1920-1927

	PUBLIC INSTITUTIONS	ARNETT SAMPLE
Professors	29.7	36.4
Associate Professors	30.6	33.9
Assistant Professors	32.3	27.3
Instructors	26.5	34.6

[20] Average salary is extrapolated by expenditures of land-grant institutions for residential instruction (which excludes plant operation, administration, extension, libraries, research, etc.) divided by the number of persons in residential instruction. This series follows the average salary closely in 1935-40. See Statistics of Land-Grant Colleges and Universities, various years. The average salary of *all* teachers in 1948 is estimated to be $4,147 (Survey of Salaries and Occupational Attitudes of Faculty Personnel of Higher Education, 1947-48, Office of Education, Circular 254).

fell 15 percent. Data for a few large universities suggest that salaries rose most in the lowest rank and least in the highest rank, and there is some evidence of an increase in the proportion of teachers in the lower ranks.

RANK VS. SALARY INCREASES

When the workers in an occupation are classified by grade or rank, the employer may increase the salaries of individuals by within-grade increments or by promotions to a higher grade, without changing the nominal schedule of salaries by rank. The time pattern of an individual's salary is then governed by three factors: the initial levels of salary for persons of given qualifications; the rate of in-grade increments; and the rate of promotion. Many discussions of salary changes concentrate on the first factor, tacitly treating the second and third factors as stable or unimportant.

We possess little information about customary patterns of in-grade increments and of promotion in college teaching, so we cannot test the stability of these patterns.[21] A detailed analysis of the salaries paid by one large university, however, illustrates the considerable scope for salary increases through more rapid in-grade increments and promotions. The salaries of individuals receiving promotions were substantially less than those who held a given rank in both 1940 and 1946, but the latters' salaries were less than those of new personnel, in the higher ranks (Table 30). Salaries of those holding a given rank increased much more than the average salary of the rank (Table 31). It is apparent that changes in the practices of in-grade increments and promotions are important possible substitutes for changes in nominal salary levels. Common observation suggests that salary increases since the war through accelerated promotion have added substantially to the salaries of college teachers.

STRUCTURE OF SALARIES

The average salaries paid by all degree-granting institutions may be estimated from a large sample study for 1940 (Table 32). Salaries of instructors are almost equal in the various types of institution (private and public colleges and teachers colleges); the differences among type of institution become larger as one goes up the ranks, but are fairly small at all ranks if one excludes

[21] Some information for a sample of 1,351 teachers is given in Circular 254.

TABLE 30

Salaries of Identical Teachers, University of Illinois, 1940 and 1946

RANK		SALARY	
1940	*1946*	*1940*	*1946*
Professor	Professor	$5,418	$6,449
Associate Professor	Professor	3,815	5,247
Assistant Professor	Professor	3,305	5,257
Instructor	Professor	2,400	6,000
Not present	Professor		7,327
Professor	Not present	5,540	
Associate Professor	Associate Professor	3,681	4,330
Assistant Professor	Associate Professor	3,149	4,137
Instructor	Associate Professor	2,422	4,028
Not present	Associate Professor		4,409
Associate Professor	Not present	3,825	
Assistant Professor	Assistant Professor	3,039	3,600
Instructor	Assistant Professor	2,271	3,334
Not present	Assistant Professor		3,416
Assistant Professor	Not present	3,064	
Instructor	Instructor	1,890	2,501
Not present	Instructor		2,190
Instructor	Not present	1,896	

Source: Table 26. 'Not present' 1946 includes emeritus faculty.

the teachers colleges. If one subclassifies these categories, however, larger differences appear: in the wealthier private colleges (measured by value of plant) professors receive almost 3 times as much as in the poorer colleges.[22]

TABLE 31

Salaries of Identical Teachers, University of Illinois Percentage Increase, 1940-1946

RANK	*1940*	*1946*	% INCREASE
Professor in 1940, present in 1946	$5,418	$6,449	19.0
Professor in 1946, present in 1940	4,810	6,049	25.8
All Professors at indicated date	5,467	6,135	12.2
Associate Professor in 1940, present in 1946	3,770	4,937	31.0
Associate Professor in 1946, present in 1940	3,134	4,162	32.8
All Associate Professors at indicated date	3,775	4,201	11.3
Assistant Professor in 1940, present in 1946	3,150	4,205	33.5
Assistant Professor in 1946, present in 1940	2,435	3,391	39.3
All Assistant Professors at indicated date	3,130	3,400	8.6
Instructor in 1940, present in 1946	2,149	3,138	46.0
Instructor in 1946, present in 1940	1,890	2,501	32.3
All Instructors at indicated date	2,037	2,280	11.9
All Faculty	3,268	3,979	21.8
All Faculty present both years	3,492	4,533	29.8

Source: Table 26.

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[22] The average salary of all college teachers in 1940 was $2,855, almost the same as the average salary of teachers in land-grant colleges ($2,866; see Table 29).

TABLE 32

Average Salaries in Degree-granting Institutions, 1940

TYPE OF INSTITUTION	PROFESSOR	ASSOCIATE PROFESSOR	ASSISTANT PROFESSOR	INSTRUCTOR	ALL RANKS
Land-grant	$4,421	$3,304	$2,733	$2,000	$3,059
Universities & colleges					
Private	3,679	3,165	2,621	1,905	2,738
Public (not land-grant)	3,864	2,930	2,381	1,812	2,885
State teachers colleges	3,270	2,643	2,386	1,990	2,539
All	3,818	3,066	2,573	1,925	2,855
Detailed Classes					
Private universities & colleges					
Plant over $10 million	5,754	3,876	3,151	2,228	3,779
Plant $3 to $8 million	4,431	3,389	2,761	1,949	3,169
Plant under $1 million	1,989	1,837	1,664	1,234	1,759
Private colleges					
Men	4,361	3,271	2,707	2,101	3,081
Women	3,339	2,925	2,457	1,877	2,660

Source: College Salaries, 1939-40, Office of Education, Circular 196. The average salary of all teachers in a rank is based on the total number of teachers in each type of school, not the number in this sample of 305 schools. The aggregates are estimated from the ratio of teachers (of all ranks) in the particular schools in the sample to all teachers in the specified type of school. Thus it is assumed that the sample is representative with respect to the distribution of teachers by rank. This table covers all teachers; Table 28 covers only those on a 9-month basis of pay.

The 1940 salary structure cannot be analyzed by region, size of community, or size of school. An earlier study, however, gives some information on the regional and size of school variations in salaries (Table 33). With few exceptions, salaries are larger in the larger schools, and larger in the New England and Middle Atlantic regions than elsewhere in the country. As both variations are large, the average for professors in small schools in the South is less than half that of professors in large schools in New England. The differences by size of school are considerably smaller (relatively and absolutely) in the lower than in the higher ranks.

College teachers have relatively equal incomes. This is one element of the unusual security of the profession: one cannot be a very great financial failure or success. The contrast with the dispersion of incomes of independent practitioners in law, medicine, and dentistry is pronounced (Figure 6 and Table 34), and the contrast with salaried business workers substantial.[23] (The inequality of college teachers' earnings is probably somewhat greater than that of salaries; see below).

The extent to which incomes within a profession approaches

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[23] See Figure 3 for the Lorenz curve of salaried workers in Minnesota; the Lorenz curve of college teachers is very similar to that of elementary and secondary school teachers.

TABLE 33
Average Salaries in Men's and Coeducational Colleges, 1927

RANK & COLLEGE ENROLLMENT	UNITED STATES	REGION				
		New England	Middle Atlantic	South	Middle West	West
Professor	$3,847					
1,000 & over	4,620	$5,632	$5,112	$3,928	$4,558	$4,184
500-1,000	3,355	4,384	3,914	3,212	2,960	3,112
Under 500	2,726	4,238	3,383	2,736	2,546	2,551
Associate Professor	3,305					
1,000 & over	3,547	4,053	4,331	2,985	3,394	3,214
500-1,000	2,741	3,377	3,127	2,430	2,488	2,648
Under 500	2,435	3,413	3,050	2,192	2,299	2,508
Assistant Professor	2,696					
1,000 & over	2,833	3,106	3,115	2,499	2,731	2,633
500-1,000	2,461	2,864	2,857	2,277	2,261	2,244
Under 500	2,169	2,783	2,322	2,056	2,107	2,421
Instructor	1,947					
1,000 & over	2,000	2,208	2,055	1,772	1,976	1,954
500-1,000	1,890	2,148	2,032	1,584	1,851	1,838
Under 500	1,623	2,200	1,724	1,553	1,664	1,239
All	3,003	3,605	3,243	2,753	2,824	2,974

Source: Arnett, General Education Board, Occasional Paper 8, Appendix. The regions are defined in *ibid.*, pp. 5-6.

equality may be viewed as determined by two factors: the directness of rivalry between members of the profession, and the importance attached to the outcome of this rivalry.[24] In law the rivalry of attorneys for litigants is direct, and the stakes are often large. In million dollar cases a lawyer who wins 60 percent of borderline cases is worth $200,000 more than one who wins 40 percent. In medicine the rivalry is less direct and personal, although still present (witness reputation, hospital connections, speed in adopting new techniques, etc.), and the stakes are very large in the buyer's eyes. Accordingly inequality is large in these fields. It is less in dentistry, where the stakes are usually much smaller in the buyer's eyes.

The two chief functions of the professor are teaching and research. Rivalry, while present in classroom performance, is mild and indirect, and indeed great success may be viewed suspiciously, perhaps as indicative of inappropriate theatricalism. The teaching abilities of a professor are usually imperfectly known, especially outside the institution where he is teaching; nor are the criteria of good teaching unambiguous. The stakes, too, are small: no matter how important it may be to give the students a good

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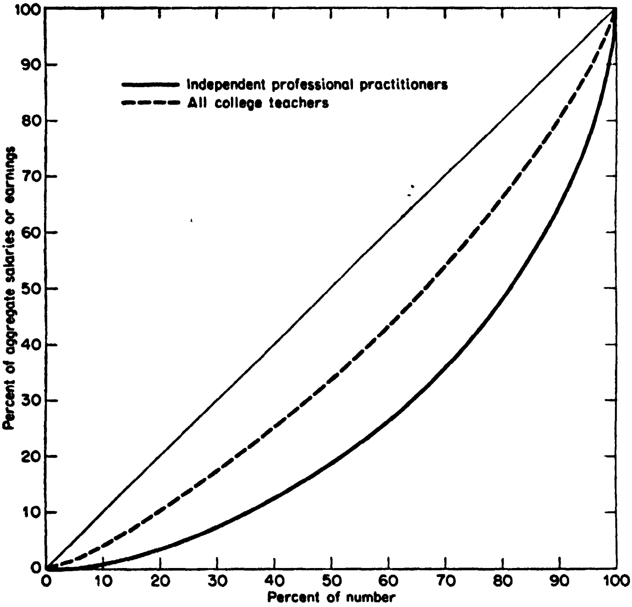
[24] We are concerned here with what might be termed pure inequality, i.e., inequality that would be found in salaries of members of a profession who are comparable with respect to age and size of community.

Figure 6

Lorenz Curves of Salaries of All College Teachers, 1940, and of Earnings of Independent Practitioners in Law, Medicine, and Dentistry, 1941



education, one teacher's contribution will usually be small. Research is more competitive—directly and personally in the journals, less directly in the search for new truths. The relative caliber of men is therefore more easily judged in research, but again the stakes are fairly low.[25] The prestige conferred upon a university by a distinguished faculty is very valuable, but again the contribution of one individual to this reputation is seldom large.

If this line of argument is correct, teachers' salaries should be more unequal in institutions emphasizing research than in those devoted primarily to instruction. This hypothesis can be roughly tested by comparing the Lorenz curve of 1940 salaries in seven large private colleges with that for 76 small private colleges.[26]

[25] They may become larger with the growing practice of universities of patenting and exploiting inventions of faculty members.

[26] The large institutions are Stanford, Johns Hopkins, New York University, Teachers College, Duke, Western Reserve, and the University of Pennsylvania. For the list of small schools, see *College Salaries, 1939-40*, p. 24 n.

TABLE 34

Salaries of College Teachers, 1940, and Earnings of Independent Practitioners in Law, Medicine, and Dentistry, Percentage Distribution, 1941

SALARY OR EARNINGS	COLLEGE TEACHERS All	COLLEGE TEACHERS Professorial ranks	LAW	MEDICINE	DENTISTRY
Under $1,000	2.7	1.4	11.8	11.3	6.4
1,000- 2,000	22.7	11.4	18.8	14.2	16.4
2,000- 3,000	37.1	36.5	20.3	15.6	21.8
3,000- 4,000	21.5	28.6	12.9	11.7	17.7
4,000- 5,000	9.2	12.6	8.3	9.3	12.7
5,000- 6,000	3.9	5.5	6.6	7.4	8.7
6,000- 7,000	1.5	2.1	4.8	6.6	5.7
7,000- 8,000	.7	1.0	3.4	4.9	3.6
8,000- 9,000	.4	.5	2.5	3.0	2.3
9,000-10,000	.3	.4	1.2	3.3	1.5
10,000 and over			9.5	12.7	3.2
Total	100.0	100.0	100.1	100.0	100.0

Source: See Tables 32, 36.

The larger institutions have more unequal salaries (Figure 7), although the difference is not large. Another bit of evidence pointing the same way is the slightly greater variability of salaries of full-time research men than of full-time undergraduate teachers in land-grant colleges in 1929.[27] The important conclusion is reinforced by these comparisons of inequality: college teachers' salaries approach unusually close to equality, even if no correction is made for differences in age, size of community, etc.

This equality of salary is only one of the elements of security the college teacher enjoys. In addition he is virtually certain of permanent employment once he receives 'tenure' (which usually accompanies a professorial appointment or follows automatically after a certain number of years of teaching at an institution), at least in the larger and older colleges: the discharge of a professor for incompetence or failure to perform his duties is extremely (and, from the viewpoint of the student one can argue regrettably) unusual. The absolute salary of the college teacher, unlike the earnings of the independent professional worker or most employees, does not decline after he passes his most productive

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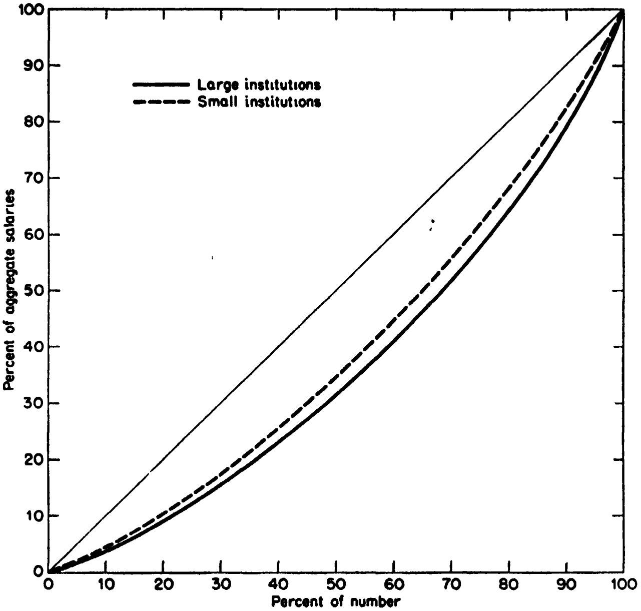
[27] See Survey of Land-Grant Colleges and Universities, Office of Education, Bulletin 1930, No. 9, Vol. 2, pp. 581-2.

	FULL-TIME Teaching	FULL-TIME Research
Number	2,639	384
Mean salary	$2,630	$2,799
Standard deviation	$855	$1,005
Coefficient of variation	32.5	35.9

Figure 7

Lorenz Curves of Salaries of Teachers in Large and Small Private Universities and Colleges, 1940



years, although a relative decline probably occurs in a period of rising salaries.

Such extreme security, matched only in the federal judiciary and in certain civil service and seniority systems, has an uncertain effect on college teachers' earnings relative to those in riskier callings. If the possibility of great success is a real attraction to persons entering professions, as Adam Smith and innumerable followers have believed, the absence of this possibility in teaching would tend to increase college teachers' salaries enough to compensate for foregoing it. In the United States before the first World War this may well have been the effect of security; if the desire for security has since grown strong, as is often claimed, it now has the opposite effect.

We have not measured differences in teachers' salaries in various disciplines or departments. One would expect significant differences to appear from time to time, for shifts in student interests and university policies (both of which tend to be nationwide) can lead to shifts in departmental staff needs at a rate that cannot be currently met by the output of new Ph.D.'s, and of course can seldom be met by shifts of existing staff members. Absolute contraction of a department has probably been a minor problem: the vast increase in enrollments for half a century has increased the number of teachers in almost every discipline. Scraps of information for a few schools suggest that differences in salaries among departments are fairly small for professors and nearly zero at other ranks, so the impact of changing demands on inelastic supplies of new teachers must be chiefly through differences in rates of promotion.

OTHER EARNINGS

Although there is considerable information on the salaries of college teachers, little is known about their aggregate professional income. Their regular salaries are often supplemented by five types of income: salaries for teaching in the summer or in extension courses; royalties on textbooks; fees for lectures, radio talks, etc.; consultation, on a sporadic or continuing basis, with public or private bodies; and private practice in numerous fields (e.g., law, medicine, accounting, engineering). Such earnings will vary with the field of specialization: they will be smaller for historians or linguists (unless they cultivate the lecture rostrum) and larger for labor experts, lawyers, and physicians. Earnings, especially consultation fees, will vary also with professional rank and the prestige of the university, since higher ranks in the more famous institutions carry with the public greater testimony of competence.

Some measure of these outside earnings is provided by a study of teachers' incomes in 1927 (Table 35).[28] Extra income of those with outside earnings amounted to a quarter of the regular salary at each rank, and of this extra income half came from extra teaching (engaged in by two-thirds to three-quarters of the teachers). The relatively high percentage of income received by instructors from 'other' activities presumably represents chiefly earnings in nonacademic activities.

The outside earnings reported in Table 35 are averages of amounts received by teachers who reported supplementary earnings; it is impossible to determine precisely the average earnings for all teachers. The percentage of teachers receiving outside earnings was higher in the higher ranks: professors, 76.2 percent; associate professors, 70.1 percent; assistant professors, 61.7 per-

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[28] Arnett, General Education Board, Occasional Paper 8.

TABLE 35

Earnings of College Teachers who had Supplementary Earnings, 1927

RANK	REGULAR SALARY	OTHER EARNINGS					
		Total	Writing	Extra teaching	Outside lectures	Consulting work	Other
			AVERAGE EARNINGS				
Professor	$4,137	$973	$237	$429	$81	$97	$129
Assoc. Prof.	3,273	761	95	428	45	80	113
Asst. Prof.	2,749	647	72	390	26	58	103
Instructor	2,032	532	38	291	17	28	158
			PERCENTAGE RECEIVING OTHER EARNINGS				
Professor			33.0	67.9	27.3	11.1	19.6
Assoc. Prof.			28.3	74.4	20.8	12.2	20.7
Asst. Prof.			20.0	74.3	12.3	9.8	25.4
Instructor			9.6	66.2	6.8	6.1	42.8
		PERCENTAGE OF AGGREGATE EARNINGS					
Professor	81.0	19.0	4.6	8.4	1.6	1.9	2.5
Assoc. Prof.	81.1	18.9	2.4	10.6	1.1	2.0	2.8
Asst. Prof.	80.9	19.1	2.1	11.5	.8	1.7	3.0
Instructor	79.3	20.7	1.5	11.4	.7	1.1	6.2

Source: Arnett, General Education Board, Occasional Paper 8, pp. 72-3.

cent; instructors, 52.4 percent. Those who did not receive any outside earnings had somewhat lower salaries than those who did.[29] For the entire group, outside earnings averaged about 17 percent of salaries.[30]

It is highly probable that the ratio of outside earnings to regular salary has been increasing steadily. Summer school enrollments have grown much more rapidly than regular enrollments, so an increasing proportion of college teachers must have been receiving income from this, the largest source.[31]

A larger proportion of college teachers are now in large cities,

[29] Arnett, *ibid.*, pp. 11, 72-3. Relatively more married men than single men had outside earnings. Differences in average age may explain the salary differences.

AVERAGE SALARIES, 1927

	PROF.	ASSOC. PROF.	ASST. PROF.	INSTR.
All teachers	$3,798	$3,256	$2,669	$1,941
Teachers with reported supplementary earnings	4,137	3,273	2,749	2,032

[30] A considerable number reported the receipt but not the amount of outside earnings. Outside earnings were 16.7 percent of salaries if those reporting supplementary earnings but not their amount, received only negligible amounts; 17.9 percent if this group on the average received the same amount of supplementary earnings as those who reported the amount.

[31] In 1919 there were 95,000 students in summer sessions, in 1939, 457,000 students. Therefore summer school enrollments increased twice as fast as regular enrollments in this period.

where opportunities for outside earnings are greater.[32] Moreover, the proportion of teachers in vocational fields (accounting, technology, etc.) has risen, and presumably this group has relatively larger outside earnings. One may conjecture, as a very rough guess, that the ratio of outside earnings to salary has risen from one-tenth in 1900 to perhaps one-fourth at present.

COMPARISONS WITH OTHER PROFESSIONS

Before entering on comparisons of the absolute level of college teachers' salaries with earnings in other occupations, we recapitulate briefly certain peculiarities of teachers' salaries previously discussed in connection with elementary and secondary school teachers:

Teachers in state institutions were exempt from federal personal income taxation before 1939. Because of the low federal rates and large exemptions in this period, the average value of the exemption to the recipients was small (perhaps 2 to 5 percent in the upper ranks).

College teachers have long vacations—about 3 months on the average in the summer plus several weeks during the school year. But if we recognize additional earnings, of which earnings from summer school teaching are most important, the effective vacation is reduced perhaps to 2 months.

Although a few private systems were already in operation by 1905, college teachers' pension and retirement systems really started with the establishment of the Carnegie Foundation, which began with a system of free pensions, but was eventually forced to close its list. Most retirement systems are now joint-contributory, and in most institutions teacher and institution each contribute 5 percent of the teacher's salary. About 85 percent of the teachers in universities and colleges and 95 percent of those in teachers colleges are now covered.[33] The institutions without a retirement plan have relatively low salaries. The retirement systems add about 4 percent to the average salary.

In addition to these supplements to college teachers' salaries, there are two not found in elementary and secondary education:

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[32] Arnett's study shows materially higher percentages of teachers receiving outside earnings in urban than in rural areas, even with his classification (in which urban teachers are in cities of over 100,000); General Education Board, Occasional Paper 8, Table X.

[33] For a comprehensive description and discussion, see W. C. Greenough, *College Retirement and Insurance Plans* (Columbia University Press, 1948).

The college teacher often has the privilege of sabbatical leave. Commonly he receives a full year's leave at half pay or a half year's leave at full pay, not more often than every seventh year. This is not a simple increase of about one-thirteenth per teaching year, for the leave is often circumscribed: a promise is exacted to return to the institution for some period; outside earnings are prohibited; etc. About half the institutions of higher learning possess the system, but many grant sabbatical leave irregularly. In 1930 only 4.8 percent of the teachers in schools having the plan were on sabbatical leave.[34]

College teachers may receive a variety of perquisites. The most important is probably housing, which sprang into prominence as an important competitive factor in recruitment recently but extends far back into the past.[35]

There are many miscellaneous items: often lower or no tuition fees for faculty children; not infrequently access on favorable terms to university health services; occasionally preferential rates at hotels, etc.; and in at least one university (Brown) $10,000 exemption from assessments for property taxes.

Of these supplements to college teachers' salaries, the long vacation is no doubt the most important quantitatively, adding a fifth to a tenth to salaries if they are appraised at the same value as teaching time,[36] when compared with occupations with one-month vacations. Vacations have declined if, as we believe, outside earnings have increased; so on balance the ratio of these monetary and nonmonetary advantages to salary has probably risen only moderately over time.

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[34] See L. B. Cooper, Sabbatical Leave for College Teachers, University of Florida Publications, Education Series, Vol. 1, No. 1 (Feb. 1932). Cooper sent inquiries to 709 institutions (excluding all junior colleges, schools for Negroes, and Catholic schools). Of the 575 institutions replying, 300 had plans of sabbatical leave, and in 193 the leave was granted regularly. In 1907 only 7 of these institutions granted sabbatical leave.

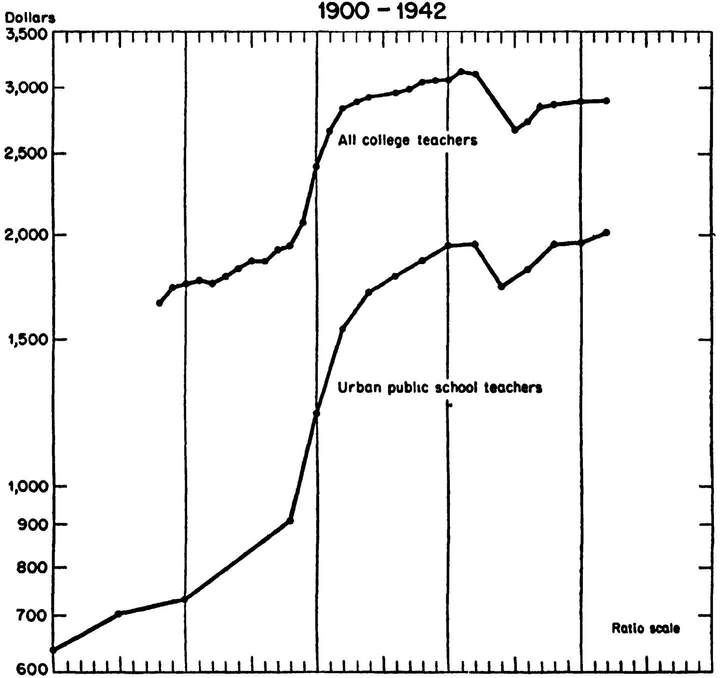
[35] Of 69 land-grant institutions 10 provided housing (on terms that were presumably generous) for some of their faculty members in 1929. (Survey of Land-Grant Colleges and Universities, Vol. 1, pp. 606-7). Before World War I the Office of Education often reported numbers of professors receiving free housing at certain universities.

[36] Summer teaching is usually paid for at the regular monthly rate; see *ibid.*, Vol. 2, pp. 417-8. This is not the only or most popular view of vacations. The late President W. R. Harper said: "In discussing the question of salaries, there is no error more ungracious and unreasonable than that which grudges the professor his vacation" (The Pay of American College Professors, *Forum,* Sept. 1893, p. 108).

The comparison of college teachers' salaries with those of elementary and secondary school teachers is subject to least qualification for differences in working year, type of work, security of tenure, and inequality of income. One important difference, however, is that most college professors are in urban areas (79.6 percent in 1940), whereas a majority of public school teachers are in rural areas (51.5 percent in 1940). A more meaningful comparison can therefore be made between college teachers' salaries and urban public school teachers' salaries than if all public school teachers' salaries are used (Figure 8).[37] The relative difference between college and public school teachers has

Figure 8

Average Salaries of Urban Public School Teachers and Teachers in Large Public Colleges and Universities 1900 – 1942



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[37] Since rural school teachers' salaries rose relative to urban school teachers' salaries, the trend about to be discussed would become even more pronounced if all school teachers' salaries were used.

steadily narrowed. In 1910 college teachers' salaries were 2.4 times those of public school teachers; by 1930 the ratio had fallen to 1.6 and by 1940 to 1.5. It appears to have continued to fall since 1940.[38]

A minor part of the explanation for this decline in the ratio of college teachers' salaries to public school teachers' salaries is found in changes in formal education.[39] The academic training of the public school teacher has risen from about 1 year beyond high school in 1900 to 4 years beyond high school in 1940. The full-time academic training of college teachers has also risen, with more obtaining the Ph.D. and this degree requiring a progressively longer period of work, but on balance the differential between public school and college teachers has probably diminished. Some part of the decline in the ratio of college teachers' to public school teachers' salaries is also attributable to the convergence of teaching levels: a rising proportion of public school teachers are in high schools, and a rising proportion of college teachers in junior colleges. The rise in the average age of public school teachers relative to college teachers works in the same direction.

An important part of the explanation, however, is also that the 1910 ratio of college teachers' to public school teachers' salaries, 2.4, vastly exceeded the additional cost of training for college teaching. The additional return, as a percentage of salary, necessary to compensate a teacher for the additional training for college teaching was then on the order of 40 or 50 percent and is now on the order of 15 or 20 percent.[40] These percentages, moreover, are for comparable groups of college and public school teachers. They should be reduced if one compares, as we must do, the average salary of urban teachers with the average salary of all college teachers.[41]

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[38] Elementary school teachers' salaries rose 66.1 percent from 1941 to 1949, high school teachers' salaries rose 57.1 percent from 1941 to 1949, and college teachers' salaries rose 46.1 percent from 1940 to 1949.

[39] The urban school year has not changed appreciably since 1910; the trend, if any, in the college year is unknown.

[40] This percentage may be estimated roughly, using the formula given by Friedman and Kuznets (*op. cit.*, p. 142). The present value of an urban public school teacher's future salary in the late 1930's was about $50,000 (see H. Clark, *Life Earnings in Selected Occupations in the United States*, Harper, 1937). The additional formal training of college teachers is about the equivalent of 3 years if a year is allowed for the doctoral dissertation. In the formula referred to, the following estimates have been used: $V = \$50{,}000$, v (the present value of the last three years' salary in public school teaching) $= \$1{,}100$, c (the present value of the additional direct costs of college teachers' training) $= \$1{,}000$, and p (the ratio of the last three years' salary to the

Most public school teachers could not enter college teaching because of the traditional opposition to women on college faculties, and many could not meet the variable but apparently rising standards of the Ph.D., but many young men could choose between the two levels, and the relative attractions of college teaching were large.[42] In addition college teaching offered greater prestige, less classroom teaching, and greater opportunities for outside earnings. College teachers increased fivefold from 1900 to 1940; public school teachers doubled. The difference in salaries was probably a significant cause of this difference in rate of growth, and the difference in the rate of growth was a major factor in the declining ratio of college teachers' to teachers' salaries.

The other group with which college teachers' salaries and earnings will be compared is the independent professions — law, medicine, and dentistry. The unfortunate restriction of our information on earnings in these professions to 1929-48 (Table 36) makes comparison difficult because the temporal pattern is dominated by the relative insensitivity of professorial salaries to business fluctuations.

These cyclical effects were perhaps at a minimum in 1941, when college teachers' salaries had regained the level of the late

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average salary of public school teachers) = 1. Then the ratio of college teachers' to teachers' salaries necessary to make the two branches equally attractive financially is 1.17.

[41] The effect of community size on salary already noted for public school teachers probably holds for college teachers. Our salary series for large public institutions probably does not include any rural college teachers. But college teachers as a class are in smaller communities than public school teachers. In 1940, 43 percent of urban public school teachers and 34 percent of urban college teachers were in cities over 100,000.

[42] The Pennsylvania studies made under the auspices of the Carnegie Foundation for the Advancement of Teaching revealed that the students in teachers colleges and the majors in education in arts colleges had lower intelligence quotients than the average college student, that their performance on the achievement tests was also low, but that the male students in education had superior records. See W. S. Learned and B. D. Wood, *The Student and his Knowledge* (Carnegie Foundation, 1938), Ch. VII.

TABLE 36

Average Incomes and Salaries in Four Professions

	LAWYERS	PHYSICIANS	DENTISTS	COLLEGE TEACHERS
1929	$5,534	$5,224	$4,267	$3,056
1932				3,111
1933	3,868	2,948	2,188	
1935	4,272	3,695	2,485	2,666
1936	4,394	4,204	2,726	2,732
1937	4,483	4,285	2,883	2,843
1938		4,093		2,861
1939	4,391	4,229	3,096	
1940		4,441		2,886
1941	4,794	5,047	3,782	
1942				2,892
1943	5,945	8,822		2,988
1944	6,504		6,649	3,282
1945	6,861		6,922	3,236
1946	6,951		6,381	3,429
1947	7,437	10,057	6,610	3,705
1948	8,121		7,039	4,098

Independent professions: E. F. Denison, Incomes in Selected Professions, *Survey of Current Business,* May 1944; William Weinfeld, Income of Lawyers, Income of Dentists, *ibid.,* Aug. 1949, Jan. 1950. The figures for physicians in 1943 and 1947 are from W. A. Richardson, Physicians' Incomes, *Medical Economics,* Sept. 1948, reduced 11.00 percent (on the basis of the 1941 relationship) for omission of physicians over 65.
College teachers: Table 29 and text.

nineteen-twenties, and the fairly sustained expansion of business had raised incomes in the independent professions well above their previous depression levels. In this year professional earnings exceeded college teachers' salaries (taking the latter to be $2,889) by the following amounts: lawyers, $1,905; physicians, $2,158; and dentists, $893.

These comparisons, however, are fatally incomplete: numerous adjustments must be made to college teachers' salaries to achieve comparability with professional earnings:

The outside earnings of college teachers are about 20 to 25 percent of their average salaries.

The vacations of college teachers exceed those in the independent professions by at least a month on the average, and amount to at least 10 percent of the average salary if valued at the rate at which teaching is usually paid.

The college contributions to college teachers' retirement funds average about 4 percent of their salaries.

The occupational expense of the college professor was on the average small (probably less than $50 per year) and his investment in equipment usually small; the earnings of independent professional workers include interest on their investment. If this investment averages $3,000, as a rough guess, at 4 percent the interest return in earnings is $120. For comparative purposes, about 2 percent should be added to college teachers' salaries.

Since college teaching is a much more rapidly growing field, its members are on the average younger. The median ages in the various professions in 1940 were college teachers, 40.8; lawyers and judges, 42.0; physicians, 44.1; dentists, 43.6. The average independent professional worker was at the age at which his earnings were at about a lifetime maximum,[43] whereas the college teacher was at a lower level relative to lifetime earnings (especially if, as is probable, salaries show no downward trend in later years of teaching comparable to that found in the independent professions). In the absence of knowledge of the life pattern of college teachers' salaries the importance of this difference cannot be estimated.

The independent professions are concentrated rather heavily in the largest communities, where income levels are relatively high; college teachers are distributed among community sizes more in proportion to the population at large. If college teachers' salaries were calculated for the same distribution among community sizes as rules in the independent professions (assuming that their salaries would show the usual size of community pattern), they would be about 15 percent higher.[44]

The full-time academic training of college teachers plus allowance of a year for the preparation of a doctoral dissertation exceeds by about a year that of dentistry and law (6 years of college), but is about 2 years less than that in medicine. In comparisons of college teachers' salaries with doctors' incomes,

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[43] See Friedman and Kuznets, *op. cit.*, pp. 237 ff.

[44] Friedman and Kuznets have performed the opposite standardization, that is, calculated the incomes in the professions if their members were distributed among community sizes in the same proportion as nonrelief families (which appears to be similar to that of college teachers). The standardized income of physicians was 90 percent of their actual average income, and the corresponding percentages for dentists and lawyers are 88 and 79 respectively; *op. cit.*, p. 184.

PERCENTAGES OF MEMBERS OF THE PROFESSIONS IN THE LARGEST COMMUNITIES, 1940

	COMMUNITY SIZE		
	Over 1,000,000	500,000-1,000,000	100,000-500,000
College teachers	9.1	4.5	13.3
Lawyers and judges	21.8	8.3	16.3
Physicians	19.4	7.4	15.7

about 10 percent should be added to the former; for comparisons with the other groups, 5 percent should be deducted.[45] The progressive personal income tax affects net earnings after taxes (which is more pertinent than earnings before tax to the relative financial attractiveness of professions) in two ways, both favorable to college teachers. Between occupations with equal average incomes before tax, the average tax is larger the more unequal the distribution of income; and of course it increases more than in proportion to average income. Tentative calculations for 1941 indicate that the federal income tax was about 14.0 percent of the average income of lawyers, 10.8 percent of the average income of physicians, 6.0 percent of the average income of dentists, and 2.7 percent of the average salary of college teachers.[46] The second effect of the progressive income tax is to favor occupations with stable incomes relative to those with fluctuating incomes, but this effect seems to be much smaller in magnitude.[47] On these two scores, the earnings of lawyers should be reduced more than 10 percent (and those in the other independent professions by smaller percentages) in comparisons with college teaching. On the other hand, it is commonly believed that salaries are more fully reported than entrepreneurial net income.

There are two important factors on the other side. One is that our salary series does not cover persons below the rank of instructor (i.e., teaching assistants, laboratory assistants, etc.) and their inclusion might lower the average college teachers' salary appreciably.[48] The other is that outside earnings in the professions, especially law, may be substantial.

In sum, more than 50 percent must be added to the salaries of college teachers in making comparisons with earnings in inde-

[45] *Ibid.*, pp. 142 ff.

[46] These calculations assume that the earner is married and has two children, and takes into account the earned income credit. For the underlying data, see Table 34.

[47] Using the same assumptions as in the previous footnote, and employing the data on incomes of physicians from 1929 to 1937 (Friedman and Kuznets, *op. cit.*, p. 101), the physician with average income would pay a tax of 3.9 percent of his income (under 1941 rates), whereas with a stable income equal to the average for the period, he would pay a tax of 2.5 percent of his income.

[48] Although if these junior positions are usually held for several years, graduate study is also pursued, and the effects on the present value of the person's future net earnings are uncertain.

pendent professions. With this correction, in 1941 the 'net advantages' of college teaching exceeded those of dentistry, and were almost equal to those of law and medicine. It would be unsafe to generalize this finding until more ample data permit a better isolation of cyclical fluctuations in incomes, but the evidence for 1941 suggests that the net financial advantages of college teaching were not much inferior to the more prosperous independent professions.

The foregoing comparison has been made for a more or less normal year. The sensitivity of income to fluctuations in general business conditions differs greatly between the independent professions and college teaching, so comparisons in years of depression or inflation yield very different conclusions. College teachers' salaries rose from 1929 to 1932 and subsequently fell only about 15 percent, whereas earnings in the independent professions began to fall in 1930 and by 1933 had fallen 45 percent from the 1929 level.[49] Thus in 1932 college teachers' average salaries were larger than the incomes of physicians and dentists and only a fifth less than lawyers' incomes.

Conversely, during the war years college teachers' salaries fell far behind earnings in the professions (Table 36). (The different rates of increase in earnings in the various professions during the war seem directly related to the proportions of their members drawn into military service.) The gap between college teachers and the professions began to narrow after the war, but the prewar relationship had not been restored by 1948: college teachers' salaries were still a fifth lower than in 1941 relative to the average of law and dentistry, and no doubt lower still relative to medicine. These figures exaggerate the gap, for no doubt outside earnings of college teachers also respond to changing business conditions.

It is impossible to say whether college teachers have on balance lost or gained relative to the independent professions from the relative rigidity of their money salaries; if one considers the 'twenties and 'thirties, they may have gained; if one considers the 'thirties and 'forties, they probably lost. But wherever the balance lies, this stability of teachers' salaries seems ill suited to periods of large inflation and deflation such as we have experienced for several decades and may continue to enjoy for some time.

[49] **See Friedman and Kuznets, *op. cit.*, p. 366.**

APPENDIX A

Number Employed in Elementary and Secondary Education

PUBLIC SCHOOLS

The chief source of information on the number of teachers is necessarily the *Biennial Survey* of the United States Office of Education. The reported number of teachers, principals, and supervisors, the basic series, requires adjustment. It is the sum of teaching positions and principals and supervisors in recent years, and the sum of teachers or teaching positions and principals and supervisors in earlier years. The distinction between positions and employees seems clear, but throughout the period when both are given, the same number is reported for both classes in more than half of the states (34 in 1936). It is not known whether the number represents positions or employees in these cases. Since in at least some cases it probably refers to positions, the number in teaching is underestimated: the number of teachers runs about 10 percent higher than the number of positions in New York, for example. Only positions are reported in recent years, and this change imparts a downward bias to the series. The series used here consists of supervisors and principals plus 'employed' teachers,[1] plus also teachers in special schools.

Moreover, the series for principals and supervisors seem unreliable. Some fluctuations in state data are given in the adjoining table. Nothing has been done to correct these figures since the obvious year-to-year changes in classification were apparently offset in good part by changes in the reported number of teachers.

PRINCIPALS

	1930	*1932*	*1934*
Arizona	171		176
California	2,741	1,028	935
Iowa	281	465	290
Maryland		206	204
Texas	6,849	2,571	2,672

The numbers reported in administrative offices also defy credi-

PROFESSIONAL ADMINISTRATIVE EMPLOYEES

	1926	*1928*	*1930*	*1932*
Mississippi	1,444	1,676	1,902	187
Idaho	126	4,694	177	380
Arizona	61	153	71	39
Pennsylvania	500	1,300	1,111	1,232
West Virginia	305	590	2,077	421

[1] The former two are estimated from the latter before 1920.

bility. In 1941-42, when reports were relatively complete and detailed, there were 20,518 professional employees. There does not seem to be any tolerably accurate method of estimating the number for the entire period.

PROFESSIONAL EMPLOYEES	
State offices of education	1,885
Superintendents	14,949
Other professional employees	3,684
Total	20,518

The statistical work of the Office of Education has been unsatisfactory in many respects, as the foregoing examples may suggest. The Office does not fully distinguish the figures it estimates from those it collects (for example, in recent *Surveys* it does not state that school enrollment by grade in Rhode Island is estimated). The descriptions of statistics are sometimes misleading (as when a figure is given for the number of "full-time equivalent" college teachers which, in 1938, included 28 percent of such teachers not reduced to a full-time basis). The preference for medians over means (which makes combination of data so difficult) has been shown in many studies, and is indeed pervasive in educational statistics; the practice of reporting open-end classes in frequency distributions is equally popular and deplorable. The general practice of obtaining almost universal coverage on some series biennially, rather than devoting the same resources to less frequent surveys of wider scope supplemented by annual samples, has severely handicapped the student of education. The delays in publication have been great: by June 1, 1949, for example, only one chapter of the *Biennial Survey* for 1945-46 had been published. Improvements are now being made in the statistical work of the Office; it is to be hoped that they will eventually include a thorough reworking of the most important series for at least the last five decades.

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PRIVATE SCHOOLS

The number of teachers in private schools is based upon the *Biennial Survey*, but obvious understatements after 1918 (e.g., in 1934) are corrected by estimating the total from the number of teachers in Catholic schools. Teachers in elementary schools in 1905 and 1915 are interpolated on the basis of the trend in their ratio to public school teachers. The early years are probably underreported. This suspicion is strengthened by the enrollment figures: in 1920 the *Biennial Survey* gives a total for all private schools that is 227,000 less than the enrollment in Catholic schools. The data in the *Survey* imply also a higher student-teacher ratio in private than in public schools in 1900, and a lower ratio in 1920. Enrollment in 1940 was 2.6 million, of which 2.3 million were in Catholic schools.

COMPARISON WITH THE POPULATION CENSUSES

The decennial Census of Occupations reports teachers (except for music, dancing art, etc.) and their numbers may be compared with those given in Table 1 of the text. The agreement is not quite as excellent as the figures suggest. The Census category

	1900	*1910*	*1920*	*1930*	*1940*
Teachers (thousands)					
Population Census	440	595	752	1,044	1,056
Biennial Survey	480	594	773	985	1,015

includes business schools, governesses, administrative officers, correspondence schools, vocational schools, and, of course, unemployed teachers. The Census figure should therefore be 5 or 10 percent higher than the Office of Education figure, but is not in the first three decennial Censuses. Nevertheless, the Census data confirm the general findings from the *Biennial Survey.*

PUBLIC NONACADEMIC EMPLOYEES

There are no continuous or complete data on nonacademic employees of public schools (and even less information for those of private schools); the *Biennial Survey,* for example, started to report numbers only in 1938, and only a third of the states reported in that year. The more important categories can be roughly estimated:

1) Janitors. The *Biennial Survey* figures for 1938 can be 'blown up' on the basis of teachers in reporting states, to yield a total of 112,000. The addition of carpenters, painters, etc. raises the total to 120,000. Alternatively, payrolls are reported in the *Biennial Survey,* and average salaries can be calculated from the salary tabulations of the National Education Association (available back to 1925), and dividing the former by the latter we get about 109,000. Both are probably underestimates, since part-time workers are incompletely reported in the *Biennial Survey* and the second procedure yields only 'full-time equivalent' employees.

2) Bus drivers. Using the 'blow-up' of *Biennial Survey* data, the number in 1938 was 91,000. Using the number of school buses (given in *Bus Facts*) multiplied by the average number of em-

ployees per bus (as given in the 1935 Census of Motor Transportation) yields 87,000 employees.

3) Other (nurses, attendance officers, clerical help, etc.). From the salary tabulations of the National Education Association a ratio to teachers can be estimated, to yield about 33,000 other employees in 1938. A 'blow-up' of the 1941-42 *Biennial Survey* data, which are more complete, yields a slightly larger figure for 1942.

It appears, therefore, that full- and part-time employees numbered about 250,000 in 1940, or a quarter of the number of teachers.

Estimating the number of janitors from payroll data, the ratio to teachers appears to be fairly constant since 1925. Using the ratio of drivers to buses to estimate bus drivers, the number drops to 15,000 in 1924, the first year in which an estimate of the number of buses is available, and the number may be presumed to have approached zero during the first World War. In the roughest of fashions these and other considerations suggest the following estimates for nonacademic personnel: in 1900, one-eighth of teachers (or 60,000); in 1910, two-fifteenths (or 80,000); in 1920, one-sixth (or 115,000); in 1930, one fifth (or 200,000); and in 1940, one-fourth (or 250,000). But the figures are so dubious that only two conclusions are safe: the number has always been large, and it has been rising more rapidly than the number of teachers.

APPENDIX B

Effect of Legislation on Enrollments

Two types of legislation have served directly to increase the proportion of older children attending school: compulsory school attendance laws and laws fixing the minimum age for employment in various industries. The first compulsory school attendance law was enacted in Massachusetts in 1842. Many states joined this movement in the last quarter of the century, and by 1900, 32 states and the District of Columbia had some sort of legislation requiring school attendance. The last of the remaining 16 states (15 of which were in the South) had passed compulsory attendance laws by 1919.

It is very difficult to summarize briefly the requirements imposed by these laws. Idaho may serve as an example: attendance is required of children from 8 to 18 (inclusive) for the full school term, but exceptions are made for children who (a) are 15 or older and have completed the 8th grade; (b) are 15 or older and whose help is necessary to support themselves or their parents or "where it would be for the best interest of such child to be relieved from the provisions of this article"; and (c) whose bodily or mental condition would interfere with regular school attendance. Several states waive the requirements if the child must walk more than 2, 2.5, or 3 miles to school; many states exempt children over a certain minimum age or school grade who have employment; and exceptions are sometimes made for children of widows, pages in legislatures, etc. These exceptions have been whittled down through time; consequently, the comparison of legislation in 1900, 1920, and 1940 (summarized in Table A) probably underestimates the growing scope of these laws. Moreover, the minimum term of school attendance required in 1900 was usually very short;[2] by 1920, 36 states required attendance for the entire school year; and in 1940 this requirement was universal.

TABLE A

Distribution of States by Maximum Age through which Children were Required to Attend Full-time Schools

MAXIMUM AGE	*1900*	*1920*	*1940*
12		2	
13	1		
14	13	9	2
15	5	7	2
16	3	29	31
17		2	8
18			6
Number of states	22	49	49
Mean age in states with laws	14.5	15.4	16.3

Along with the increase in the maximum age of compulsory attendance has gone a widening prohibition on child labor. The laws are too diverse to be summarized in a neat tabulation but it is easy to convey an impression of the great expansion of this form of control between 1900 and 1940. In the early year, 6 states had no legislation, 13 prohibited only work in mines, 5 prohibited only such employments as tight-rope walking, and no state had a minimum age for employment higher than 14. By

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[2] The required terms were 12 weeks per year in 10 states, 16 weeks per year in 6 states, 20 weeks per year in 2 states, 28 weeks per year in 1 state, a full term in 1 state.

1940 every state except Wyoming had a minimum age of 14 or more for work in the broader class of factories, mines, and mercantile establishments. In 36 states the maximum age for compulsory school attendance is higher than the minimum age at which a child can work in a factory or store, and in all except one of the remaining states these ages are equal.

It is tempting to leap to the conclusion that these laws have been very effective in promoting school attendance. The percentage of children 15-18 inclusive enrolled in school was closely related in 1940 to the maximum age of compulsory school attendance (Table B). In both urban and rural-farm areas the absolute level of enrollment was higher in states with higher maximum ages for school attendance, and fell less rapidly with age. But the causal role of legislation is not so easily determined; the data in Table B are consistent with the views both that legislation compels higher enrollments and that states with high enrollments pass laws that reflect the more basic conditions leading to high enrollments.

TABLE B

Average by States of Percentage of Children Enrolled in Schools by Age and Maximum Age through which Attendance was Compulsory, 1940

MAXIMUM AGE OF COMPULSORY ATTENDANCE	AGE OF CHILDREN			
	15	16	17	18
		URBAN		
18	94.4	88.8	76.6	49.8
17	90.7	81.1	67.8	43.8
16	92.7	81.0	66.5	41.0
15	85.6	72.8	54.6	33.0
14	80.8	67.2	50.2	30.6
		FARM		
18	90.3	81.5	68.8	45.4
17	79.0	66.1	51.6	32.5
16	81.1	66.5	51.1	32.4
15	72.4	57.6	40.9	25.2
14	73.0	58.1	40.8	24.1

Of course both interpretations contain some truth. We can cite at least two kinds of evidence that the laws tend to increase enrollments. Enrollments are higher in cities with higher maximum ages of school attendance than in other cities in the same state.[8] Again, a jump in public school enrollments is often

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[8] In Delaware, for example, the maximum age is 16 in Wilmington and 17 elsewhere. The effect on the percentages enrolled in school is clear.

	AGE OF CHILDREN			
	15	16	17	18
Wilmington	95.3	76.3	58.8	34.5
Other urban areas	95.8	75.2	64.6	36.8

apparent immediately after a higher compulsory age is set.[4] On the other hand, if we classify states by per capita income and the racial composition of the children (Table C)—both of which are in a sense more fundamental and persistent than school age legislation—within the cells there is no evidence of a correlation between legislation and school enrollments.[5]

TABLE C

Average Percentages of Children 16-17 Enrolled in Schools in 1940, by Percentage of Nonwhite Children in 1940 and Per Capita Income Payments in 1939

	PERCENTAGE OF NONWHITE CHILDREN		
	0 to 5	5 to 15	15 & more
PER CAPITA INCOME	PERCENTAGE ATTENDING SCHOOL		
$200-$400	71.7	57.8	55.6
400- 600	74.8	63.2	60.2
600- 825	73.3	75.2	56.7
	NUMBER OF STATES		
$200-$400	4	5	7
400- 600	16	2	3
600- 825	6	4	1

The effects of legislation cannot be separated without taking account of the many exceptions in the school attendance laws, and this intricate investigation is not necessary here. Our brief study suggests, however, that the influence of legislation is a relatively weak factor, whose presumptive significance comes largely from the correlation of maximum age in the statute with incomes and racial composition.

[4] For example, Wyoming increased the maximum age from 14 to 17 in 1923. The enrollments in secondary public schools were:

	ENROLLMENT	% INCREASE IN BIENNIUM
1918	3,376	
1920	4,476	32.6
1922	5,763	28.7
1924	8,634	49.8
1926	9,664	11.9
1928	10,644	10.1
1930	11,164	4.9

[5] The variance of the percentage of children enrolled in schools among the groups of states with various maximum ages of compulsory attendance may be compared with the variance within these groups. Although the former exceeds the latter, the variance ratio is only 1.20, with 11 and 25 degrees of freedom respectively (computed from the data underlying Table C); such a large ratio would occur by chance more than a fifth of the time. Even if income and ethnic factors are neglected, the results are the same when school enrollments in cities with populations exceeding 100,000 are analyzed. The ratio of the variance among groups of cities with different maximum ages to the variance within these groups is 1.26, with 3 and 82 degrees of freedom respectively; this ratio could arise by chance almost one-fifth of the time.

APPENDIX C

Academic Personnel in Higher Education

Again the chief source is the *Biennial Survey*. Since 1932 all professional employees are reported; before then only teaching staff (which excludes research, extension, and administration) was given. The ratio of teachers to all academic employees has been stable at about eight-tenths in recent years, but this ratio cannot be extrapolated backward. Extension teaching began about 1890, and full-time research was probably relatively less important early in our period.[1] The nonteaching staff was estimated roughly by extrapolating the percentage of extension to regular teachers back to zero in 1890, assuming the ratio of research staff to teachers was half as high in 1900 as in 1938, and holding the ratio of administrative staff to teachers constant. The figures in the text are reported numbers, not reduced to a full-time basis.[2] Duplications are excluded by use of the reported unduplicated totals in recent years.

A comparison may readily be made with the corresponding Census class:

	1900	*1910*	*1920*	*1930*	*1940*
Decennial Census	7,272	15,668	33,407	61,905	75,096
Biennial Survey	29,000	45,000	62,000	105,000	147,000

The discrepancy is very large, but is partly explicable in terms of differences in content. It has recently been inferred from the discrepancy that a large fraction (perhaps one-third) of faculty members have their major employment in another industry.[3] This inference seems less plausible than that graduate teaching and laboratory assistants are reported as employees to the Office of Education and as students to the Census, and that numerous teachers in religious seminaries, junior colleges, business schools, etc. are probably excluded by the Census from 'college presidents and professors'.

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[1] The reported expenditures by public institutions of higher learning are first available in detail for 1928. The rise in the percentage of research to instructional expenditures from 5.9 in 1928 to 7.5 in 1935 may well be influenced by an increasing practice of budgeting research separately.

[2] The ratio of 'full-time equivalent' to all employees has been nine-tenths in recent years; no reduction was made in earlier years. The nature of the reduction to a full-time basis is ambiguous; each school makes its own decision, including the decision not to make the adjustment (see App. A).

[3] Report of the President's Commission on Higher Education (Washington, D. C., 1947), Part IV, 29.

APPENDIX D

College Teachers' Salaries

Salaries before 1935 are based on Viva Boothe's *Salaries and the Cost of Living in Twenty-seven State Universities and Colleges, 1913-32* (Ohio State University Press, 1932). Of the 27 institutions, 14 were land-grant schools. Median salaries in each school were reported, beginning in 1922, and their average taken. For 1914 (not 1913) through 1921, she estimated average medians from the reported maximum and minimum salaries in each institution, on the basis of the relationship among them in the 'twenties, and averaged these estimated medians. This procedure has been carried back to 1908, except that the average median was estimated directly from the average maxima and minima.[1]

Median salaries in land-grant colleges and universities are given in various reports of the Office of Education.[2] Those for individuals on a 9-month basis were chosen as a more appropriate continuation of Boothe's series than salaries of those on 11-12 month bases, since the 11-12 month basis is less common in non-land-grant schools. It is reassuring that the mean of the medians is fairly close to the mean calculated from the frequency distribution, in years when the latter is available (Table D).[3] The

MEDIAN SALARIES FOR 9-MONTH AND ALL TEACHERS

	1929		*1930*		*1931*	
	All	9-month	All	9-month	All	9-month
Professors	$4,219	$4,348	$4,342	$4,407	$4,417	$4,480
Associate Professors	3,287	3,359	3,369	3,345	3,382	3,418
Assistant Professors	2,799	2,691	2,868	2,775	2,882	2,815
Instructors	2,066	2,003	2,102	1,995	2,094	2,069

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[1] The data are in annual Bulletins of the Office of Education. Miss Boothe's average maximum and minimum for 1914 differ from those calculated from the reports (so the average medians are 2.5 to 3 percent higher for 1914 in her tables); the 1908-13 salaries were raised to splice them to her series. The discrepancy may be due to her editing of the reports, in the course of which she obtained corrected data from some schools. For 1908 and 1909 only maximum salaries were available.

[2] They are summarized in the Report of the President's Commission, VI, 39.

[3] The means in this table are $125 higher than those reported in the Twenty-eighth Annual Report of the National Bureau of Economic Research, 1948, p. 33. The data are reported by $250 class intervals, and in earlier work the calculations were made on the assumption that, because of the tendency to give round-number salaries, all salaries fell at the bottom of a class interval. Although this assumption is probably more reasonable than the conventional one of a uniform distribution within the interval, the evidence seemed insufficient to depart from standard practice.

close agreement between Boothe's and the land-grant series in 1929-31 is a trifle suspicious, for the state universities as a class have salaries that average appreciably less than those of land-grant institutions.

TABLE D

Three Salary Series for College Teachers

	1929	*1930*	*1931*	*1940*	*1942*
			PROFESSOR		
Boothe	$4,348	$4,407	$4,480		
Mean salary	4,480	4,568	4,620	$4,421	$4,475
Office of Education, 9-mo. basis	4,278	4,457	4,513	4,245	4,302
			ASSOCIATE PROFESSOR		
Boothe	3,359	3,345	3,418		
Mean salary	3,369	3,434	3,451	3,304	3,359
Office of Education, 9-mo. basis	3,342	3,349	3,362	3,272	3,324
			ASSISTANT PROFESSOR		
Boothe	2,003	1,995	2,069		
Mean salary	2,092	2,155	2,135	2,000	2,018
Office of Education, 9-mo. basis	2,047	2,060	2,066	1,937	1,862
			INSTRUCTOR		
Boothe	2,691	2,775	2,815		
Mean salary	2,872	2,917	2,920	2,733	2,758
Office of Education, 9-mo. basis	2,738	2,818	2,837	2,605	2,645

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